PRIMA
PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA

Progetti finanziati 2023

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Portogallo

FCT Fundação para a Ciência e a Tecnologia

FRCT
FUNDO REGIONAL PARA A CIÊNCIA E TECNOLOGIA

Spagna

MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

CDTI Centro para el Desarrollo Tecnológico Industrial

AGENCIA ESTATAL DE INVESTIGACIÓN

Francia

AGENCE NATIONALE DE LA RECHERCHE
ANR

Lussemburgo

Luxembourg National Research Fund

Germania

Federal Ministry of Education and Research

DLR-PT

PTKA
Projektträger Karlsruhe
Karlsruher Institut für Technologie

Marocco

Royaume du Maroc
Ministère de l'Education Nationale, de la Formation Professionnelle, de l'Enseignement Supérieur et de la Recherche Scientifique

Algeria

DGRSDT
البحث العلمي في خدمة المواطن

Tunisia

Tunisian Republic
Ministry of Higher Education and Scientific Research
Directorate General of Scientific Research

Italia

MUR
Ministero dell'Università e della Ricerca

Malta

Xjenza
The Malta Council for Science & Technology

Slovenia

REPUBLIC OF SLOVENIA
MINISTRY OF EDUCATION, SCIENCE AND SPORT

Grecia

GSRT
GENERAL SECRETARIAT FOR RESEARCH AND TECHNOLOGY

Turchia

TÜBİTAK

Libano

CNRS
National Council for Scientific Research

Cipro

Research Promotion Foundation

Croazia

REPUBLIC OF CROATIA
Ministry of Science and Education

Egitto

Academy of Scientific Research And Technology
أكاديمية البحث العلمي والتكنولوجيا

STDF
صندوق العلوم والتنمية التكنولوجية
Science and Technology Development Fund

Israele

משרד המדע, הטכנולוגיה והחלל
Ministry of Science, Technology & Space

רשות החדשנות
Israel Innovation Authority

ISERD
Israel-Europe R&I Directorate

Giordania

المملكة الأردنية الهاشمية
وزارة التعليم العالي والبحث العلمي
صندوق دعم البحث العلمي والابتكار

Il presente documento è stato realizzato dal Segretariato italiano di PRIMA, in collaborazione con il Ministero dell'Università e della Ricerca. Il Segretariato italiano di PRIMA, con sede presso il Santa Chiara Lab dell'Università di Siena, è l'ente deputato alla disseminazione e promozione su scala nazionale delle attività previste nell'ambito del Partenariato.

PRIMA (Partnership for Research and Innovation in the Mediterranean Area) è un'iniziativa sostenuta e finanziata nell'ambito del Programma quadro europeo di ricerca e innovazione ai sensi dell'art. 185 del Trattato sul Funzionamento dell'Unione Europea.

Segretariato italiano di PRIMA, Progetti finanziati 2023 - www.primaitaly.it

Le informazioni contenute nel presente documento sono aggiornate al 31 maggio 2024, a conclusione delle procedure selettive. Non si escludono eventuali variazioni (numero di unità di ricerca, budget dei Progetti, referenti scientifici, ecc.) sopraggiunte dopo quella data.

Indice

Anna Maria Bernini
Ministro dell'Università
e della Ricerca

"La collaborazione nello studio e nella ricerca, "al di sopra di ogni frontiera" – come ci ha ricordato il Presidente della Repubblica Mattarella - sono preziosa fonte di avanzamento di ogni civiltà. Tutto questo assume un valore ancora maggiore in relazione agli specifici ambiti di ricerca e di attività di PRIMA, a cominciare dallo studio di soluzioni innovative nel settore dell'approvvigionamento idrico e dei sistemi alimentari. Su queste tematiche, obiettivi strategici e di lungo periodo anche per molti nostri partner del mediterraneo, l'Italia sta concentrando risorse, energie politiche e di programmazione."

Angelo Riccaboni
Presidente della Fondazione PRIMA

"Per affrontare le sempre più critiche questioni dell'area Euro-Mediterranea in termini di cooperazione internazionale, cambiamenti climatici, sviluppo sostenibile, sicurezza alimentare e scarsità idrica sono sempre più preziosi la capacità del sistema della ricerca di generare impatti positivi per cittadini, imprese e comunità e il consolidamento dei partenariati fra innovatori di diversi Paesi. PRIMA, in sintonia con la Commissione Europea, nella definizione dei propri piani futuri sta sempre di più concentrando il proprio impegno su tali obiettivi, anche attraverso l'attento ascolto dei principali stakeholder nazionali e internazionali e rafforzando le sinergie con gli altri attori della regione."

Nota introduttiva

Negli scorsi mesi, grazie alla fattiva collaborazione delle istituzioni europee e al rinnovato sostegno espresso di tutti i 19 Paesi attualmente aderenti a PRIMA, è stato possibile concludere il percorso di approvazione della continuazione del Partenariato anche per il triennio 2025-2027 con risorse aggiuntive provenienti dai Paesi e da Horizon Europe. Tale continuazione, a cui si aggiunge l'adesione da parte della Bulgaria quale nuovo Stato partecipante a PRIMA, dimostra la rilevanza strategica del Partenariato e offre l'opportunità per avviare un percorso di ascolto e sintesi in vista del Programmazione Quadro successiva ad Horizon Europe, dove il tema dei Partenariati sembra andrà incontro ad una significativa riorganizzazione.

Dal punto di vista scientifico, l'Iniziativa ha continuato ad affrontare tematiche chiave quali la valorizzazione delle produzioni locali, la gestione efficiente delle risorse idriche, la tutela degli acquiferi e delle acque sotterranee, l'adattamento al cambiamento climatico attraverso tecniche genetiche per la resilienza delle coltivazioni, la promozione della biodiversità, digitalizzazione e tracciabilità delle filiere, pratiche di agro-ecologia, meccanismi di lotta contro lo spreco alimentare e sistemi di agricoltura di precisione per la gestione sostenibile delle risorse naturali, soluzioni per packaging intelligenti, nonché efficientamento dell'irrigazione in filiere importanti quali riso, olio, formaggio e nell'intero comparto ortofrutticolo, l'approvvigionamento dei cereali, il legame salute-alimentazione anche alla luce di una corretta valorizzazione dei prodotti della Dieta Mediterranea. Tutto nel quadro di un convinto e coerente allineamento agli indirizzi strategici che negli ultimi anni si sono andati delineando in Europa e che hanno avuto nel Green Deal, nella Farm to Fork, nella Strategia sulla Bioeconomia, nel Piano di Azione sull'Economia Circolare e nella Strategia sulla Biodiversità, nonché più recentemente con le Missioni europee.

Nel salutare positivamente i risultati del 2023 per l'Italia, si ricordi come al tempo stesso, il Partenariato ha saputo consolidarsi, accrescendo visibilità e attivando collaborazioni proficue con importanti istituzioni e organizzazioni nazionali, europei ed internazionali. In tale prospettiva, giova menzionare una prima attuazione degli impegni assunti nell'ambito dell'Iniziativa sulla sicurezza alimentare promossa per il Mediterraneo dal Ministero degli Affari Esteri italiano, la rafforzata collaborazione con FAO, la partecipazione di PRIMA alle importanti iniziative sulla diplomazia scientifica promosse dall'UE, nonché con attori quali Unione per il Mediterraneo e l'Istituto Agronomico di Bari, gli altri Partenariati europei.

Consapevoli che PRIMA rappresenta il più grande programma di ricerca e innovazione mai lanciato nel Mediterraneo, tutti gli attori coinvolti sono fortemente impegnati nel garantire l'eccellenza scientifica e l'impatto della ricerca a favore di aziende, comunità e cittadini, in linea con le aspettative dei decisori politici e della società nel suo complesso. Forti di oltre 200 progetti in portafoglio capaci di coinvolgere una rete di oltre 2000 unità di ricerca e circa 10000 ricercatori nel Mediterraneo, ci proponiamo di dare ulteriore sviluppo alle idee e alle soluzioni fin qui finanziate attraverso meccanismi diversificati che permettano un utilizzo più ampio e incisivo da parte delle aziende delle innovazioni proposte. Sarà "impatto", infatti, uno dei termini chiave che dovrà caratterizzare i prossimi anni di attività, sulla base del quale il nostro lavoro sarà misurato.

A tal proposito, il progetto europeo FUTURE4PRIMA, coordinato dalla Fondazione PRIMA, vede un ruolo centrale del Ministero Università e Ricerca e rappresenta un utile strumento per progettare assieme il futuro del Partenariato. In tale ambito saranno attivati meccanismi e percorsi di coinvolgimento e ascolto dei principali attori del Paese, così da poter mettere in luce le priorità e sensibilità che il sistema Italia vorrà esprimere per definire gli obiettivi, le caratteristiche e le azioni del Partenariato nel suo futuro

PRIMA ha saputo raggiungere obiettivi che, in sua assenza, non avrebbero potuto essere colti da nessun'altra iniziativa. Le sfide scientifiche e geopolitiche che caratterizzano il Partenariato sono ancora vive e urgenti. È, quindi, impegno di tutti continuare con rinnovata leadership, alta professionalità gestionale, una forte cooperazione istituzionale per contribuire, con la ricerca e l'innovazione, ad un Mediterraneo e un'Europa più prospere e inclusive.

Risultati dei bandi PRIMA 2023

Risultati dei bandi PRIMA 2023 in sintesi

Sezione1

16
Paesi partecipanti
di cui

8 EU — CY FR DE GR IT PT SI ES

8 Non-EU — DZ EG IL JO LB MA TN TR

9
Progetti finanziati
di cui

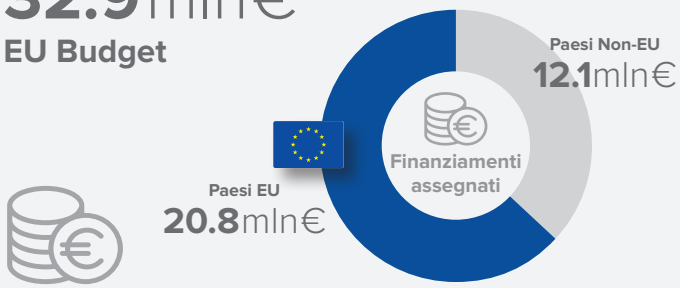
4,8% PERCENTUALE DI SUCCESSO

188
Proposte presentate

Progetti per nazionalità Enti coordinatori

3 3 2 1

32.9 mln€
EU Budget



2 2 3 2

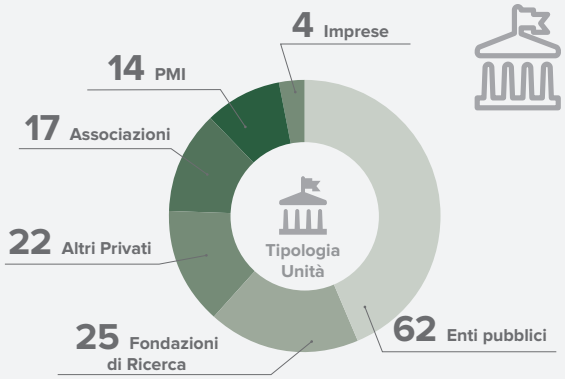
Progetti per Area tematica

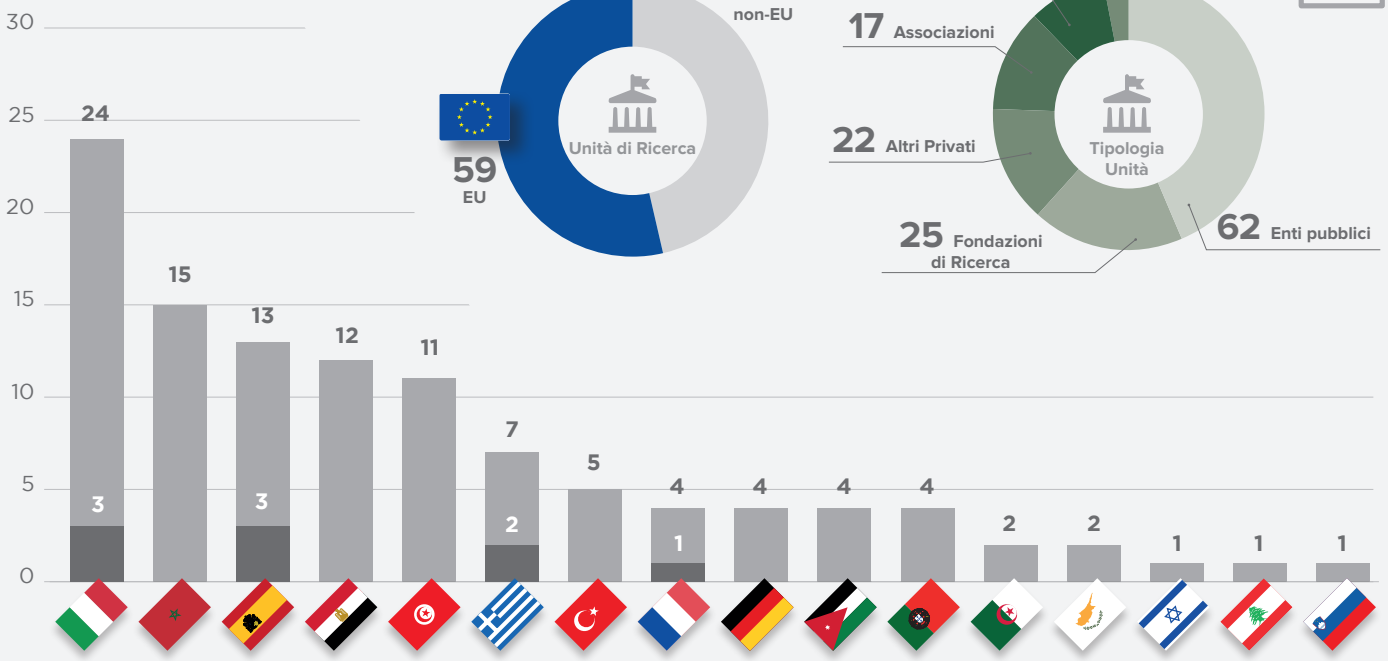
3 RIAs 6 IAs

2 IAs 2 IAs 3 RIAs 2 IAs

Azioni per Area tematica

110 Unità di Ricerca





Unità di Ricerca per nazionalità

Risultati dei bandi PRIMA 2023 in sintesi

Sezione1

Progetti per Area tematica

- Water Management
- Farming Systems
- Agro-food Value Chain
- Nexus

La **Sezione 1** prevede bandi per progetti transnazionali di ricerca e innovazione (RIA) o di innovazione (IA), organizzati e gestiti dalla Fondazione PRIMA e finanziati con risorse UE. I criteri di partecipazione e di valutazione delle proposte sono quelli stabiliti dal Programma quadro europeo di ricerca e innovazione.

SEZIONE 1

Progetti finanziati		Paesi	Unità di Ricerca	Budget
1		Grecia		
		Italia		
		Tunisia		
		Cipro		
		Egitto		
CIRQUA Integrated Approaches at Local Scale for Enhancing Water Reuse Efficiency and Sustainable Soil Fertilization from Wastewater's Recovered Nutrients SCHEDA PROGETTO a pag. 76	**IA**	Germania		4.270.000 €
		Marocco		
		Portogallo		
		Spagna		
		Turchia		
		10	**13**	
2		Spagna		
		Cipro		
		Egitto		
SPORE-MED Sustainable upgraded wastewater treatment plants for resource recovery, water reuse and health surveillance in the Mediterranean region SCHEDA PROGETTO a pag. 78	**IA**	Grecia		3.630.284 €
		Italia		
		Marocco		
		Tunisia		
		7	**9**	

3

TRANSFORMED

Transforming the Mediterranean region through agroforestry: large scale restoration of degraded lands by overcoming the socioeconomic and sociocultural barriers for agroforestry adoption

SCHEDA PROGETTO a pag. 106

RIA

Spagna	
Marocco	
Portogallo	
Tunisia	
Turchia	
Germania	
Francia	
7	**16**

4.132.500 €

4

VENUS

ConVErting marginal lands of the Mediterranean basin into productive and sustainable agro-ecosystems using low water demanding Neglected and Underutilized Species

SCHEDA PROGETTO a pag. 82

RIA

Grecia	
Italia	
Egitto	
Algeria	
Francia	
Marocco	
Spagna	
Tunisia	
8	**13**

4.562.857 €

5

CERERE 2023

Circular and Inclusive utilisation of alternative PROteins in the MEDiterranean value chains

SCHEDA PROGETTO a pag. 58

IA

Italia	
Egitto	
Germania	
Israele	
Portogallo	
Tunisia	
Turchia	
7	**10**

2.750.000 €

6

SEEDS

Title Sustaining Economies and Enhancing Dynamic Structures

SCHEDA PROGETTO a pag. 60

IA

Italia	
Egitto	
Tunisia	
Giordania	
Marocco	
Spagna	
Grecia	
7	**16**

2.748.875 €

SEZIONE 1

7

STAPLES

STable food Access and Prices and Lower Exposure to Shocks

SCHEDA PROGETTO a pag. 62

IA

Italia	
Egitto	
Spagna	
Marocco	
4	**9**

2.695.000 €

8

DIONYSUS

Operational adaptation Nexus-based systems solutions in Mediterranean

SCHEDA PROGETTO a pag. 98

IA

Francia	
Italia	
Egitto	
Grecia	
Marocco	
Algeria	
Germania	
Tunisia	
Turchia	
9	**14**

4.077.000 €

9

RES-MAB

Promoting WEFE Nexus-based adaptation and mitigation solutions and landscape resilience to climate change in the Mediterranean Biosphere Reserves

SCHEDA PROGETTO a pag. 100

IA

Spagna	
Francia	
Italia	
Giordania	
Libano	
Marocco	
Slovenia	
7	**10**

4.055.000 €

Risultati dei bandi PRIMA 2023 in sintesi

Sezione2

19
Paesi partecipanti
di cui

11 EU — CY HR FR DE DE IT LU MT PT SI ES

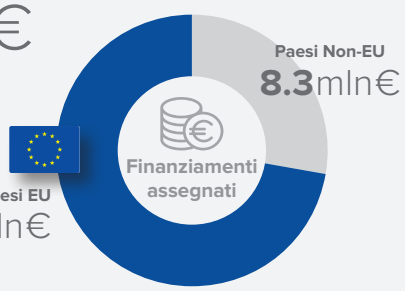
8 Non-EU — DZ EG IL JR LB MA TN TR

27 Progetti finanziati
24,3% PERCENTUALE DI SUCCESSO
111 Proposte presentate
di cui

Progetti per nazionalità Enti coordinatori

8 6 3 2 2 2 1 1 1 1

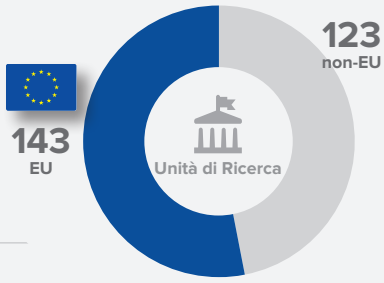
30.9 mln€
Budget
Paesi

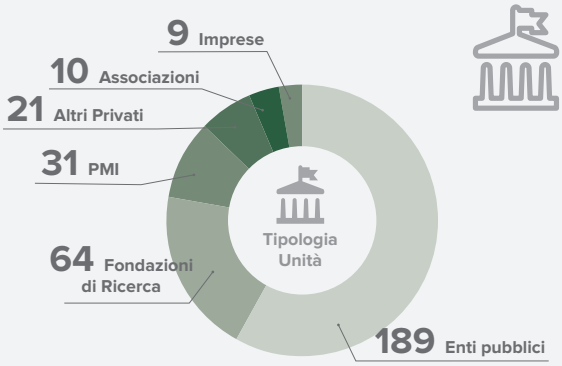


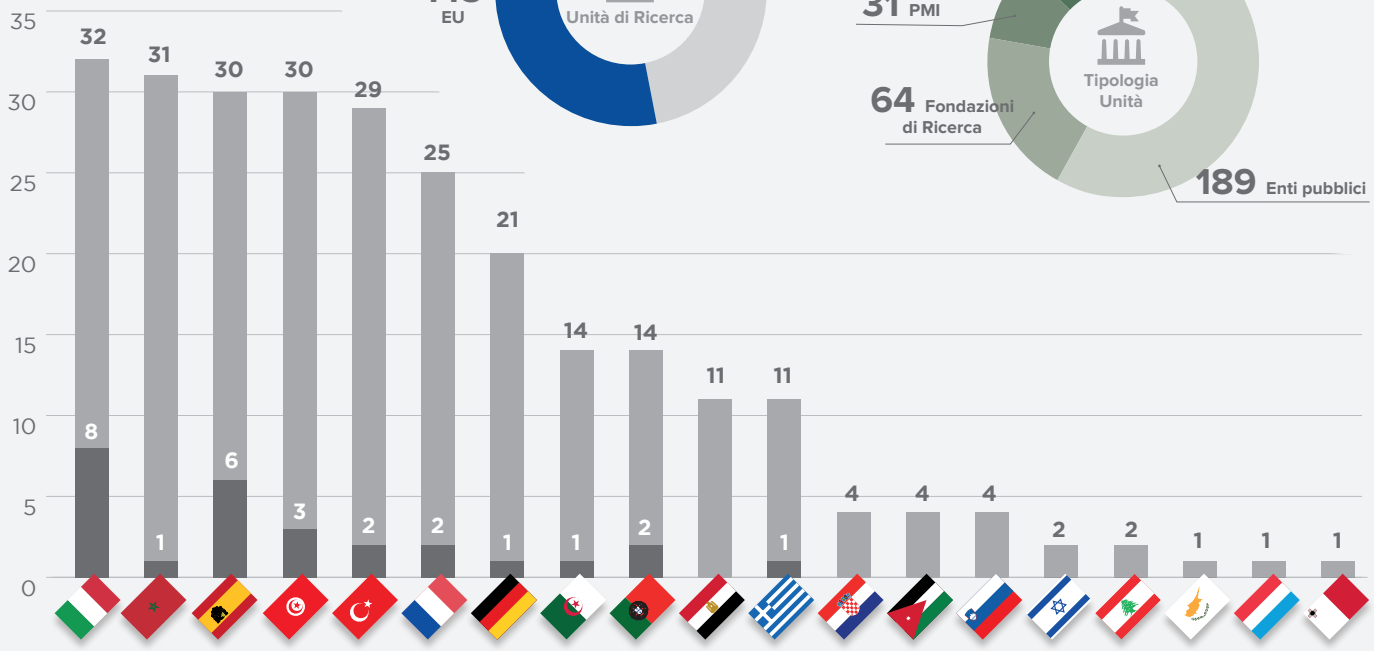
2 8 17
Progetti per Area tematica

27 RIAs
Azioni

266
Unità di Ricerca







Unità di Ricerca per nazionalità

Risultati dei bandi PRIMA 2022 in sintesi

Sezione 2

Progetti per Area tematica

- Water Management
- Farming Systems
- Agro-food Value Chain

La **Sezione 2** prevede bandi per progetti transnazionali di ricerca e innovazione (RIA), organizzati e gestiti dalla Fondazione PRIMA e finanziati dai Paesi partecipanti.
I criteri di partecipazione sono quelli stabiliti dal Programma quadro europeo di ricerca e innovazione e dai singoli Paesi. I criteri di valutazione delle proposte sono quelli stabiliti dal Programma quadro europeo di ricerca e innovazione.

SEZIONE 2

Progetti finanziati		Paesi	Unità di Ricerca	Budget
1 **Sm@wa-Medi** New Sm@rt Process Combining Nanotechnology-Magnetic-Filtration for Brackish and Natural Water Treatment to Enhance Irrigation Efficiency and Agricultural Yield in the Mediterranean basin SCHEDA PROGETTO a pag. 104	RIA	Tunisia	5	440.000 €
		Egitto	3	
		Marocco	2	
		Algeria	1	
		Francia	1	
		Spagna	1	
		6	**13**	
2 **WATER4MED** Water management strategies and Adaptation acTions undER a global change context FOR the MEDiterranean region SCHEDA PROGETTO a pag. 80	RIA	Spagna	1	1.388.037 €
		Germania	1	
		Giordania	1	
		Italia	1	
		Marocco	1	
		Portogallo	1	
		Tunisia	1	
		7	**7**	
3 **3D-STELLAR** 3D Solar disTillEr and flash pyroLysis for recycling oLive mill wastewate into irrigation water and biochAR SCHEDA PROGETTO a pag. 108	RIA	Francia	2	609.400 €
		Marocco	2	
		Tunisia	1	
		3	**5**	

4

BIOACT

Benefits assessment of on-farm regenerative agricultural practices on durum wheat systems to promote climate emergy-based sustainability and food security in the Mediterranean area

SCHEDA PROGETTO a pag. 52

RIA

Italia	3
Algeria	1
Francia	1
Spagna	1
Tunisia	1
5	**7**

1.187.306 €

5

CombiFarm

Combining low-cost biochar, biogas, and cyanobacteria fertigation technologies with low-input crops for sustainable bioproducts in smart circular farming systems

SCHEDA PROGETTO a pag. 110

RIA

Tunisia	2
Marocco	3
Germania	2
Francia	2
Turchia	2
Slovenia	1
7	**12**

1.181.000 €

6

CYCLOLIVE

From waste to resource: ReCYCLing OLIVE oil extraction byproducts for sustainable agricultural practices in the Mediterranean region

SCHEDA PROGETTO a pag. 84

RIA

Tunisia	2
Italia	2
Francia	1
Germania	1
Giordania	1
Tunisia	1
Turchia	1
7	**9**

1.492.345 €

7

EcoFertiS

Innovative processing of manures and biowastes of Eco-friendly Fertilizers

SCHEDA PROGETTO a pag. 112

RIA

Algeria	4
Egitto	2
Francia	1
Germania	1
Tunisia	1
Turchia	1
6	**10**

1.035.000 €

8

PAVER

Precision AgriVoltaics for Carbon Neutrality Enhanced Production and Reduced Environmental Impact in Greenhouse

SCHEDA PROGETTO a pag. 114

RIA

Spagna	2
Marocco	3
Egitto	2
Francia	1
4	**7**

805.000 €

SEZIONE 2

9

Sun2Fork

Sustainable greenhouse farming systems: from sun to fork

SCHEDA PROGETTO a pag. 54

RIA

Italia	
Portogallo	
Israele	
Marocco	
Spagna	
Tunisia	
6	**8**

838.392,50 €

10

SUPREM-MILK

Towards a more sustainable and resilient Mediterranean milk supply chain

SCHEDA PROGETTO a pag. 56

RIA

Italia	
Francia	
Turchia	
Egitto	
Marocco	
5	**9**

1.447.837,13 €

11

A- BLOCK

Nano-Enabled Antimicrobial Food Packaging Incorporating Natural Bioactives from Mediterranean Agri-Wastes

SCHEDA PROGETTO a pag. 116

RIA

Turchia	
Francia	
Germania	
Grecia	
Lussemburgo	
5	**7**

1.507.291,56 €

12

AgriBioPack

Valorizing Agrifood Residues for Bio-based Packaging Solutions

SCHEDA PROGETTO a pag. 64

RIA

Italia	
Turchia	
Marocco	
Slovenia	
Spagna	
Croazia	
Francia	
7	**15**

1.490.153,5 €

13

BIOMEDPACK

Shelf-life Enhancing Packaging Systems for Mediterranean Food through Innovative and Circular Solutions Based on Agri-Food Multi-Product Cascade Biorefinery

SCHEDA PROGETTO a pag. 86

RIA

Spagna	
Germania	
Marocco	
Algeria	
Italia	
Tunisia	
Turchia	
7	**9**

1.784.972 €

SEZIONE 2

14

DurInnPack

Innovative Packaging and edible coatings to guarantee post-harvest Durability of Mediterranean fruits and vegetables production

SCHEDA PROGETTO a pag. 88

RIA

Spagna	2
Algeria	1
Francia	1
Italia	1
Marocco	1
Portogallo	1
Tunisia	1
7	**8**

1.334.945 €

15

EVOLVEPACK

Towards a more sustainable and resilient Mediterranean milk supply chain

SCHEDA PROGETTO a pag. 118

RIA

Spagna	2
Turchia	2
Croazia	1
Francia	1
Israele	1
Marocco	1
Portogallo	1
Slovenia	1
8	**10**

1.559.053,96 €

16

FoWRSaP

Agro Food Waste Recovery: new processing technologies for food Safety and Packaging

SCHEDA PROGETTO a pag. 90

RIA

Tunisia	4
Spagna	3
Marocco	2
Turchia	2
Algeria	1
Francia	1
Giordania	1
Grecia	1
Italia	1
Portogallo	1
10	**17**

1.594.588,38 €

17

INTACTBioPack

INTelligent, ACTive MicroBIOme-based, biodegradable PACKaging for Mediterranean food

SCHEDA PROGETTO a pag. 92

RIA

Francia	1
Tunisia	2
Turchia	2
Algeria	1
Croazia	1
Egitto	1
Italia	1
Spagna	1
Portogallo	1
9	**11**

1.628.795,40 €

SEZIONE 2

18

MATE4MEAT

Sustainable and antimicrobial MATErials for MEAT packaging

SCHEDA PROGETTO a pag. 66

RIA

Italia	🏛🏛🏛
Turchia	🏛🏛
Algeria	🏛
Cipro	🏛
Germania	🏛
Spagna	🏛
6	**9**

1.512.775,7 €

19

NOVAPACK

NOVel Antimicrobial coatings and PACKaging in the mediterranean

SCHEDA PROGETTO a pag. 120

RIA

Portogallo	🏛🏛
Spagna	🏛🏛🏛
Tunisia	🏛🏛
Egitto	🏛
4	**8**

999.768 €

20

NOVISHPAK

Novel biodegradable, antimicrobial and smart packaging and coatings for increased shelf-life of Mediterranean fish filets

SCHEDA PROGETTO a pag. 122

RIA

Grecia	🏛🏛🏛
Algeria	🏛
Francia	🏛
Germania	🏛
Malta	🏛
Marocco	🏛
Tunisia	🏛
7	**9**

1.620.000 €

21

OLIVEPACK

Bio-based antimicrobial packaging materials to increase the shelf life of naturally fermented low-salt table olives

SCHEDA PROGETTO a pag. 124

RIA

Turchia	🏛🏛
Grecia	🏛🏛🏛
Portogallo	🏛
Spagna	🏛
Tunisia	🏛
5	**8**

912.407 €

22

PASPACK 4.0

Producing Alternative Sustainable food bio-based PACKaging from Mediterranean agri-food by-products and waste

SCHEDA PROGETTO a pag. 94

RIA

Portogallo	🏛🏛🏛
Germania	🏛🏛🏛
Francia	🏛🏛
Libano	🏛🏛
Marocco	🏛🏛
Croazia	🏛
Italia	🏛
Tunisia	🏛
Turchia	🏛
9	**16**

1.734.637,34 €

SEZIONE 2

23

PLAMINPACK
PLAnt-based antiMIcrobial aNd circular PACKaging for plant products
SCHEDA PROGETTO a pag. 68

RIA

Italia	
Germania	
Algeria	
Francia	
Grecia	
Marocco	
Tunisia	
7	**10**

2.019.816 €

24

QuiPack
Food value chain intelligence and integrative design for the development and implementation of innovative food packaging according to bioeconomic sustainability criteria
SCHEDA PROGETTO a pag. 96

RIA

Germania	
Grecia	
Marocco	
Francia	
Italia	
Portogallo	
Spagna	
Tunisia	
Turchia	
9	**13**

2.084.032 €

25

SAFOOD4MED
Innovative and safe antimicrobial bioplastics for food preservation in the mediterranean area
SCHEDA PROGETTO a pag. 70

RIA

Italia	
Marocco	
Algeria	
Egitto	
Germania	
Giordania	
6	**9**

1.605.780 €

26

SAPHIRA
Sustainable Antimicrobial Packaging based on a Healthy Intelligent Renewable Approach
SCHEDA PROGETTO a pag. 72

RIA

Italia	
Spagna	
Egitto	
Marocco	
Tunisia	
Turchia	
6	**8**

1.221.945 €

27

SuN4Med
Sustainable and novel tood packaging based on agro-industrial by-products and natural antimicrobials from the mediterranean area
SCHEDA PROGETTO a pag. 126

RIA

Spagna	
Francia	
Tunisia	
Turchia	
Germania	
Marocco	
6	**12**

1.052.584 €

Risultati dei bandi PRIMA 2023 in sintesi

Dati complessivi

S1+S2

36 Progetti finanziati

12% PERCENTUALE DI SUCCESSO

299 Proposte presentate

di cui

Progetti per nazionalità Enti coordinatori

11	9	3
3	3	2
2	1	1
1		

4 | 10 | 20 | 2

Progetti per Area tematica

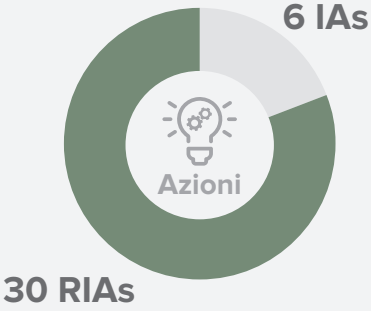
Azioni

Research and Innovation Actions

2 | 8 | 20

Innovation Actions

2 | 2 | 2



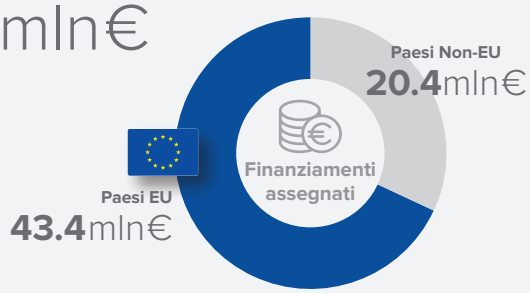
19 Paesi partecipanti

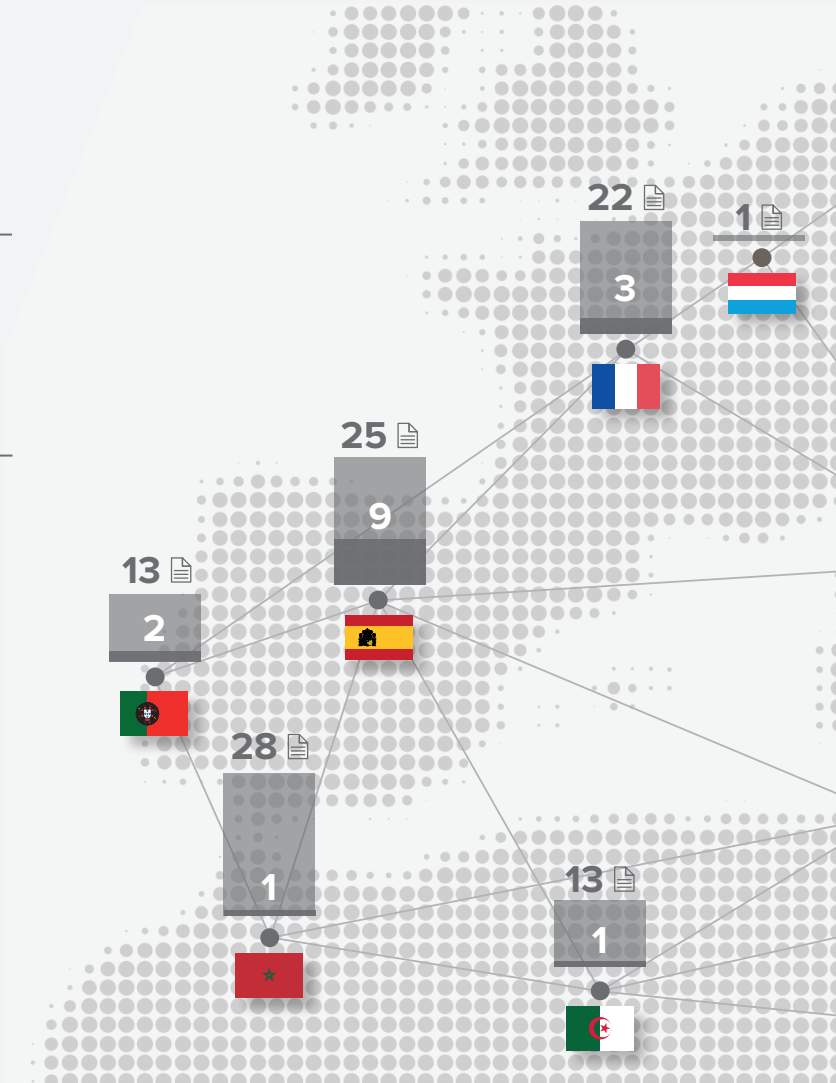
di cui

11 EU — CY HR FR DE GR IT LU MT PT SI ES

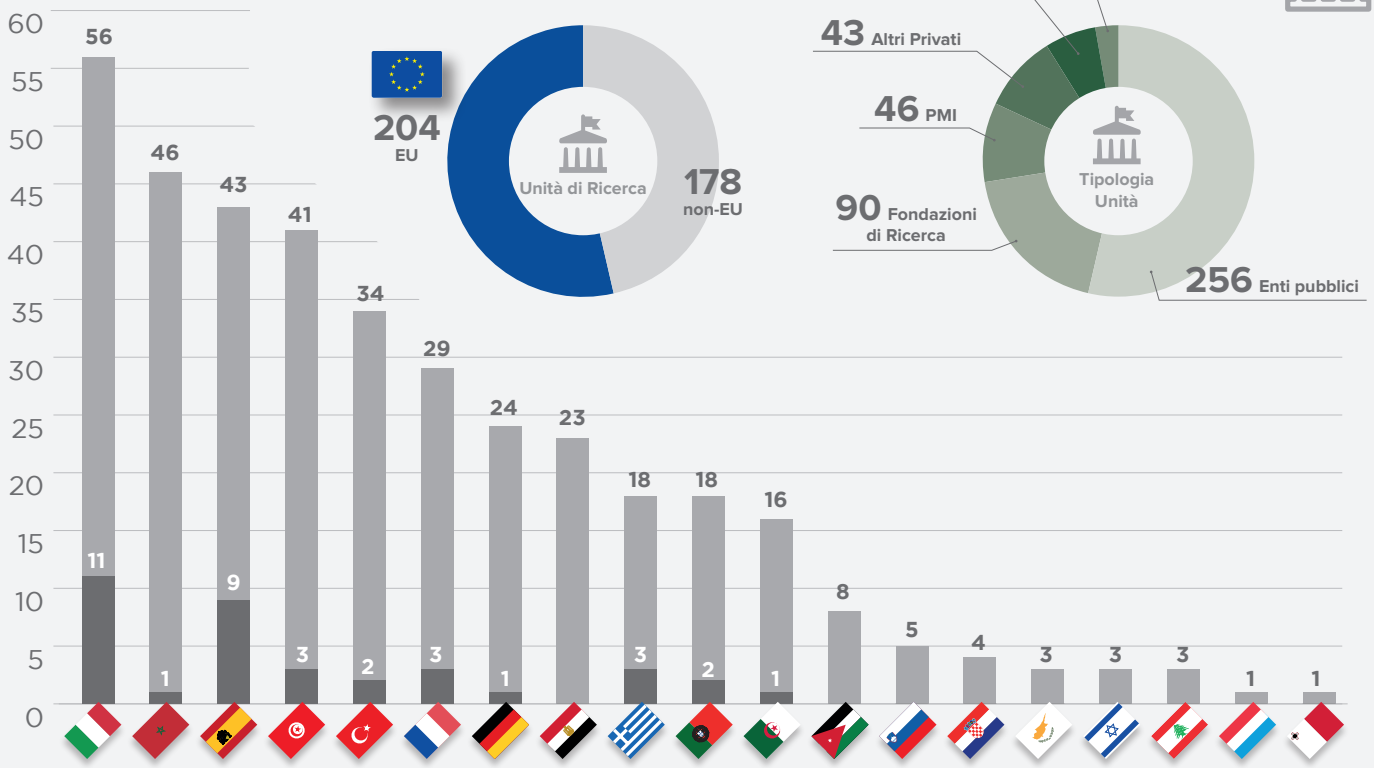
8 Non-EU — DZ EG IL JO LB MA TN TR

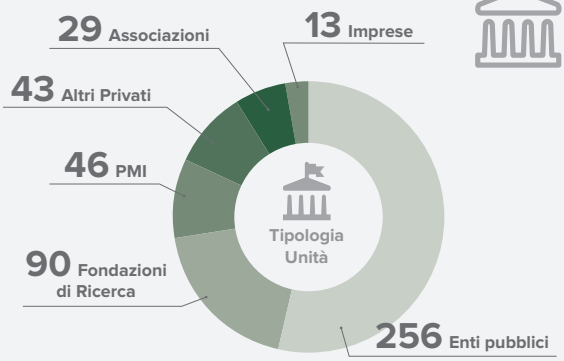
63.8 mln€ Budget EU+Paesi

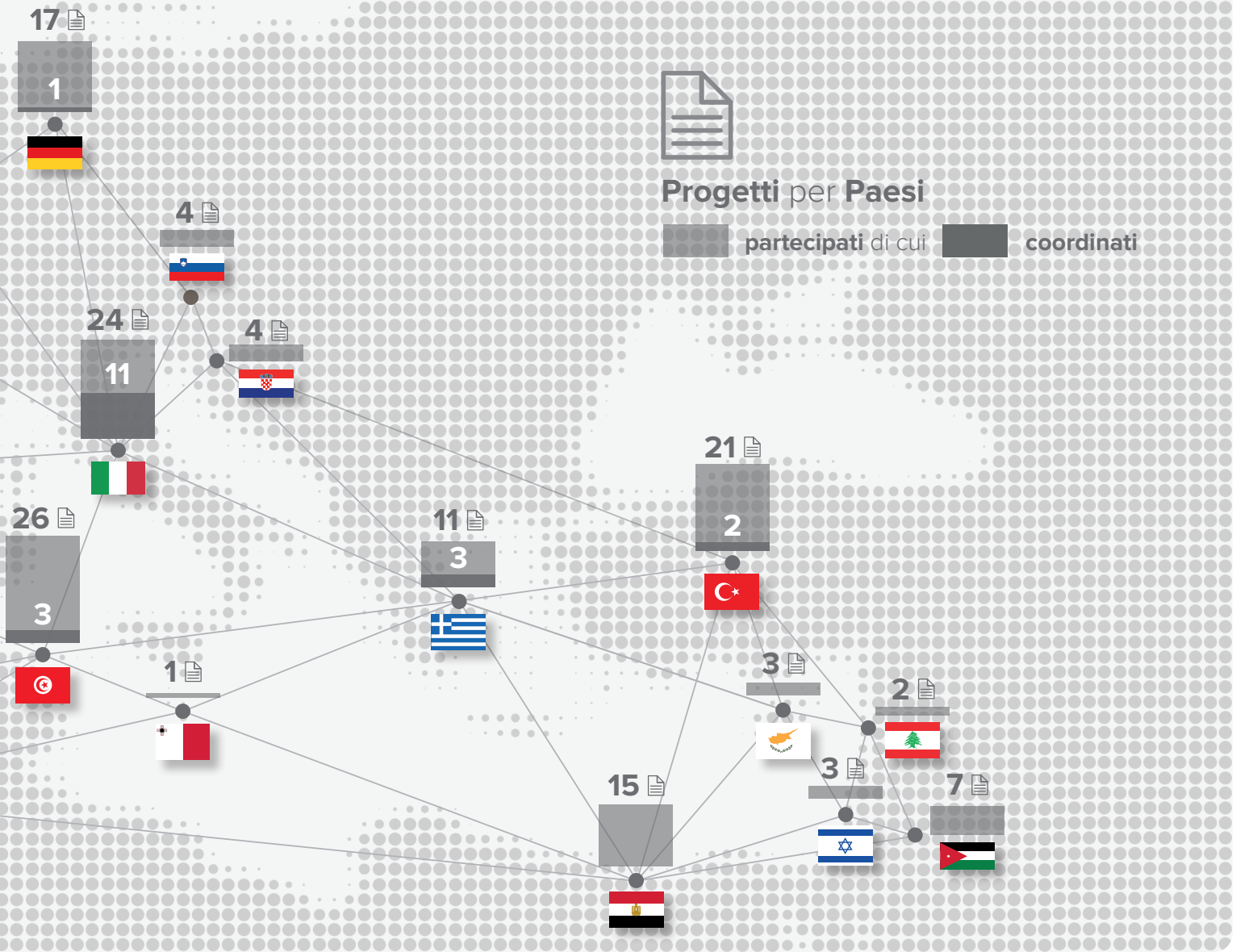




376 Unità di Ricerca per nazionalità







Risultati dei bandi PRIMA 2023 in sintesi

Dati complessivi

Progetti per Paesi

ALGERIA - DZ

Budget
1.5 Mln €

16 Unità di ricerca

di cui

13 Progetti
coinvolgono una o più unità di ricerca algerine

1 Progetto
è coordinato da una unità di ricerca algerina

Progetti per area tematica

1
Sm@wa- Medi2023 /S2

4
BIOACT2023 /S2
CombiFarm2023 /S2
Eco-FertiS /S2
VENUS 2023 /S1

7
BIOMEDPACK /S2
DurInnPack /S2
INTACTBioPack /S2
MATE4MEAT /S2
NOVISHPAK /S2
PLAMINPACK /S2
SAFOOD4MED /S2

1
DYIONISUS /S1

CIPRO - CY

Budget
783.5 K €

3 Unità di ricerca

3 Progetti
coinvolgono una o più unità di ricerca cipriote

Progetti per area tematica

1
CIRQUA /S1

1
SPORE-MED /S1

1
MATE4MEAT /S2

CROAZIA - HR

Budget
450 K €

4 Unità di ricerca

4 Progetti
coinvolgono una o più unità di ricerca croate

Progetti per area tematica

5

AGRIBIOPACK /S2
EVOLVEPACK /S2
INTACTBIOPACK /S2
PASPACK 4.0 /S2

EGITTO - EG

Budget
3.8 Mln €

23 Unità di ricerca
di cui **3 PMI**

15 Progetti
coinvolgono una o più unità di ricerca egiziane

Progetti per area tematica

3

CIRQUA /S1
Sm@wa- Medi2023 /S2
SPORE-MED /S1

4

Eco-FertiS /S2
PAVER /S2
SUPREM-MILK /S2
VENUS 2023 /S1

7

CERERE 2023 /S1
INTACTBIOPACK /S2
NOVAPACK /S2
SAFOOD4MED /S2
SAPHIRA /S2
SEEDS /S1
STAPLES /S1

1

DYIONISUS /S1

FRANCIA - FR

Budget
7.2 Mln €

29 Unità di ricerca
di cui **3 PMI**

di cui

22 Progetti
coinvolgono una o più unità di ricerca francesi

3 Progetti
sono coordinati da una unità di ricerca francese

Progetti per area tematica

1
Sm@wa- Medi2023 /S2

8
3D-STELLAR /S2
BIOACT2023 /S2
CombiFarm2023 /S2
CYCLOLIVE /S2
Eco-FertiS /S2
PAVER /S2
SUPREM-MILK /S2
TRANSFORMED /S1

11
A- BLOCK /S2
AgriBioPack /S2
DurInnPack /S2
EVOLVEPACK /S2
FoWRSaP /S2
INTACTBioPack /S2
NOVISHPAK /S2
PASPACK 4.0 /S2
PLAMINPACK /S2
QuiPack /S2
SuN4Med /S2

1
DYIONISUS /S1
RES-MAB /S1

GERMANIA - DE

Budget
3.7 Mln €

25 Unità di ricerca
di cui **7 PMI**

di cui

17 Progetti
coinvolgono una o più unità di ricerca tedesche

1 Progetti
sono coordinati da una unità di ricerca tedesca

Progetti per area tematica

2
CIRQUA /S1
WATER4MED2023 /S2

4
CombiFarm2023 /S2
CYCLOLIVE /S2
Eco-FertiS /S2
TRANSFORMED /S1

10
A- BLOCK /S2
BIOMEDPACK /S2
CERERE 2023 /S1
MATE4MEAT /S2
NOVISHPAK /S2
PASPACK 4.0 /S2
PLAMINPACK /S2
QuiPack /S2
SAFOOD4MED /S2
SuN4Med /S2

1
DYIONISUS /S1

GIORDANIA - JO

Budget
1.3 Mln €

8 Unità di ricerca
di cui **1 PMI**

7 Progetti
coinvolgono una o più
unità di ricerca giordane

Progetti per area tematica

1
WATER4MED2023 /S2

2
CYCLOLIVE /S2
VENUS 2023 /S1

3
FoWRSaP /S2
SAFOOD4MED /S2
SEEDS /S1

1
RES-MAB /S1

GRECIA - GR

Budget
4.1 Mln €

18 Unità di ricerca
di cui **4 PMI**

di cui

11 Progetti
coinvolgono una o più
unità di ricerca greche

3 Progetti
sono coordinati da una
unità di ricerca greca

Progetti per area tematica

2
CIRQUA /S1
SPORE-MED /S1

1
VENUS 2023 /S1

7
A- BLOCK /S2
FoWRSaP /S2
NOVISHPAK /S2
OLIVEPACK /S2
PLAMINPACK /S2
QuiPack /S2
SEEDS /S1

1
DYIONISUS /S1

ISRAELE - IL

Budget
600 K €

3 Unità di ricerca

3 Progetti
coinvolgono una o più
unità di ricerca israeliane

Progetti per area tematica

1
SUN2FORK /S2

2
CERERE 2023 /S1
EVOLVEPACK /S2

ITALIA - IT

Budget
14 Mln €

56 Unità di ricerca
di cui **8 PMI**

di cui

24 Progetti
coinvolgono una o più
unità di ricerca italiane

11 Progetti
sono coordinati da una
unità di ricerca italiana

Progetti per area tematica

3
CIRQUA /S1
SPORE-MED /S1
WATER4MED2023 /S2

5
BIOACT2023 /S2
CYCLOLIVE /S2
Sun2Fork /S2
SUPREM-MILK /S2
VENUS 2023 /S1

14
AgriBioPack /S2
BIOMEDPACK /S2
CERERE 2023 /S1
DurInnPack /S2
FoWRSaP /S2
INTACTBioPack /S2
MATE4MEAT /S2
PASPACK 4.0 /S2
PLAMINPACK /S2
QuiPack /S2
SAFOOD4MED /S2
SAPHIRA /S2
SEEDS /S1
STAPLES /S1

2
DYIONISUS /S1
RES-MAB /S1

LIBANO - LB

Budget
412 K €

3 Unità di ricerca

2 Progetti
coinvolgono una o più
unità di ricerca libanesi

Progetti per area tematica

1
PASPACK 4.0 /S2

1
RES-MAB /S1

LUSSEMBURGO - LU

Budget
500 K €

1 Unità di ricerca

1 Progetto
coinvolge una
unità di ricerca lussemburghese

Progetti per area tematica

1
A-BLOCK /S2

MALTA - MT

Budget
300 K €

1 Unità di ricerca

1 Progetti
coinvolgono una
unità di ricerca maltese

Progetti per area tematica

1

NOVISHPAK /S2

MAROCCO - MA

Budget
5.7 Mln €

46 Unità di ricerca
di cui **3 PMI**

di cui

28 Progetti
coinvolgono una o più
unità di ricerca marocchine

1 Progetto
è coordinato da una
unità di ricerca marocchina

Progetti per area tematica

4

CIRQUA /S1
Sm@wa-Medi2023 /S2
SPORE-MED /S1
WATER4MED2023 /S2

8

3D-STELLAR /S2
CombiFarm2023 /S2
CYCLOLIVE /S2
PAVER /S2
Sun2Fork /S2
SUPREM-MILK /S2
TRANSFORMED /S1
VENUS 2023 /S1

14

AgriBioPack /S2
BIOMEDPACK /S2
DurInnPack /S2
EVOLVEPACK /S2
FoWRSaP /S2
NOVISHPAK /S2
PASPACK 4.0 /S2
PLAMINPACK /S2
QuiPack /S2
SAFOOD4MED /S2
SAPHIRA /S2
SEEDS /S1
STAPLES /S1
SuN4Med /S2

2

DYIONISUS /S1
RES-MAB /S1

PORTOGALLO - PT

Budget
2.1 Mln €

18 Unità di ricerca
di cui **2 PMI**

di cui

13 Progetti
coinvolgono una o più unità di ricerca portoghesi

2 Progetti
sono coordinati da una unità di ricerca portoghese

Progetti per area tematica

2
CIRQUA /S1
WATER4MED2023 /S2

2
SUN2FORK /S2
TRANSFORMED /S1

9
CERERE 2023 /S1
DurInnPack 2023 /S2
EVOLVEPACK /S2
FoWRSaP /S2
INTACTBioPack /S2
NOVAPACK /S2
OLIVEPACK /S2
PASPACK 4.0 /S2
QuiPack /S2

SLOVENIA - SI

Budget
573.2 K €

5 Unità di ricerca

4 Progetto
coinvolge una unità di ricerca slovene

Progetti per area tematica

1
COMBIFARM2023 /S1

2
AGRIBIOPACK /S2
EVOLVEPACK /S2

1
RES-MAB /S1

SPAGNA - ES

Budget
9.7 Mln €

43 Unità di ricerca
di cui **4 PMI**

di cui

25 Progetti
coinvolgono una o più unità di ricerca spagnole

9 Progetti
sono coordinati da una unità di ricerca spagnoli

Progetti per area tematica

4

CIRQUA /S1
Sm@wa-Medi2023 /S2
SPORE-MED /S1
WATER4MED2023 /S2

6

BIOACT2023 /S2
CYCLOLIVE /S2
PAVER /S2
Sun2Fork /S2
TRANSFORMED /S1
VENUS 2023 /S1

14

AgriBioPack /S2
BIOMEDPACK /S2
DurInnPack /S2
EVOLVEPACK /S2
FoWRSaP /S2
INTACTBioPack /S2
MATE4MEAT /S2
NOVAPACK /S2
OLIVEPACK /S2
QuiPack /S2
SAPHIRA /S2
SEEDS /S1
STAPLES /S1
SuN4Med /S2

1

RES-MAB /S1

TUNISIA - TN

Budget
4.3 Mln €

41 Unità di ricerca
di cui **6 PMI**

di cui

26 Progetti
coinvolgono una o più unità di ricerca tunisina

3 Progetti
sono coordinati da una unità di ricerca tunisina

Progetti per area tematica

4

CIRQUA /S1
Sm@wa-Medi2023 /S2
SPORE-MED /S1
WATER4MED2023 /S2

7

3D-STELLAR /S2
BIOACT2023 /S2
CombiFarm2023 /S2
CYCLOLIVE /S2
Eco-FertiS /S2
TRANSFORMED /S1
VENUS 2023 /S1

14

BIOMEDPACK /S2
CERERE 2023 /S1
DurInnPack /S2
FoWRSaP /S2
INTACTBioPack /S2
NOVAPACK /S2
NOVISHPAK /S2
OLIVEPACK /S2
PASPACK 4.0 /S2
PLAMINPACK /S2
QuiPack /S2
SAPHIRA /S2
SEEDS /S1
SuN4Med /S2

1

DYIONISUS /S1

TURCHIA - TR

Budget
2.8 Mln €

34 Unità di ricerca
di cui **5 PMI**

di cui

21 Progetti
coinvolgono una o più unità di ricerca turche

2 Progetto
è coordinato da una unità di ricerca turca

Progetti per area tematica

1

CIRQUA /S1

6

CombiFarm2023 /S2
CYCLOLIVE /S2
Eco-FertiS /S2
Sun2Fork /S2
SUPREM-MILK /S2
TRANSFORMED /S1

13

A-BLOCK /S2
AgriBioPack /S2
BIOMEDPACK /S2
CERERE 2023 /S1
EVOLVEPACK /S2
FoWRSaP /S2
INTACTBioPack /S2
MATE4MEAT /S2
OLIVEPACK /S2
PASPACK 4.0 /S2
QuiPack /S2
SAPHIRA /S2
SuN4Med /S2

1

DYIONISUS /S1

Progetti con unità di ricerca italiane in sintesi

Focus Italia

Nei sei anni di attuazione del programma PRIMA (2018-2032), la ricerca italiana ha conseguito ottimi risultati: su 238 progetti finanziati ben 183 vedono la partecipazione dell'Italia, con 81 direttamente coordinati da un ente italiano. Di oltre 349 milioni finora erogati, quasi 80 milioni di euro sono andati a beneficio di ricercatori e innovatori del nostro Paese. Per l'Italia il 2023 è stato nuovamente un anno positivo in termini di partecipazione al Programma internazionale PRIMA.

Nel 2023, il numero dei Progetti ammessi al finanziamento e partecipati da unità di ricerca italiane è di oltre 14 milioni a favore di 24 progetti in linea con i successi degli anni precedenti. Di questi, 11 sono i Progetti coordinati da un'unità di ricerca italiana, numero che conferma la percentuale media di oltre 40% di coordinamenti italiani nell'arco dei cinque anni di attività. Le entità italiane coinvolte sono in tutto 56 tra dipartimenti universitari, piccole e medie imprese, aziende, associazioni di categoria ed istituti privati di ricerca. Inoltre, sono 13 le Regioni rappresentate, con una rappresentanza omogenea di tutte le aree territoriali del nord, centro e sud Italia.

Il budget destinato ai progetti italiani 2023, infine, risulta più alto della media dei quattro anni precedenti, con oltre 13 milioni di euro ed una media per unità di ricerca di 250.000 euro, di oltre il 30% maggiore della media a livello di Programma. Dei 14 milioni, 7.7 milioni sono finanziati dalla Commissione europea nel quadro della Sezione I con un ritorno economico particolarmente significativo, persino maggiore della quota messa a disposizione dal Ministero dell'Università e della Ricerca per Progetti di Sezione II (6.3 milioni), quest'anno leggermente inferiore. La maggior parte dei Progetti italiani finanziati dai bandi PRIMA 2023 rientra nell'area tematica relativa alle filiere agroalimentari (14) tanto per sezione I che per sezione II. Un dato che compensa quello degli anni passati dove l'area tematica legata ad un'agricoltura sostenibile era risultata costantemente maggioritaria, come attesa oltre il 50% dei coordinamenti tra gli 81 progetti a guida italiana. Complessivamente è confermato un tasso di successo più alto rispetto alla media registrate nel programma, tanto per il 2023 quanto nell'arco dei sei anni.

Questi dati testimoniano ancora una volta la grande attenzione ai temi della ricerca e dell'innovazione nel settore agroalimentare sia da parte delle Istituzioni che dei ricercatori e del settore privato italiani. Considerando la rilevanza, quanto mai attuale del settore alla luce dello scenario internazionale, l'Italia si dimostra un attore di primo piano a livello euro-mediterraneo per il contributo all'avanzamento dei sistemi agricoli ed alimentari e al loro raggiungimento di adeguati livelli di sostenibilità.

La ridotta partecipazione, a livello di programma, sulle domande di Sezione II ha garantito, a fronte di un numero analogo di progetti finanziati, un più alto tasso di successo. L'eccellenza della ricerca e innovazione italiana hanno contribuito a rafforzare l'azione diplomatica esercitata dal nostro Paese sul tema della sicurezza alimentare nel Mediterraneo, così come promossa a vari livelli dal nostro Paese. Parimenti il tema della agro-ecologia e della valorizzazione della dieta mediterranea possono rappresentare aspetti distintivi. Il ruolo della ricerca e dell'innovazione si dimostra cruciale anche nell'ambito delle molte iniziative promosse nel contesto del PNRR che non mancherà di offrire utili opportunità e sinergie anche con le progettualità già finanziate dal Programma PRIMA.

I progetti finanziati nel 2023 intendono affrontare alcune delle principali sfide legate alla promozione di sistemi agroalimentari sostenibili. Tra questi il supporto alla produzione agricola nel rispetto degli impegni ambientali, anche alla luce del riconosciuto collegamento cibo-clima; modelli di economia circolare applicati al settore agricolo; la promozione della resilienza della filiera cerealicola nella regione mediterranea, fortemente influenzata dalle dinamiche geopolitiche globali; innovazioni per un packaging capace di ridurre gli sprechi alimentari e garantire una sicurezza degli alimenti; approcci innovativi per una gestione integrata degli impianti relativi al trattamento delle acque non convenzionali; nuovi modelli per una gestione sostenibile delle acque transfrontaliere, così da mitigare i conflitti su di essa; nonché una confermata attenzione all'adattamento e la mitigazione del cambiamento climatico, attraverso le connessioni inter-settoriali tra cibo-acqua-energia ed ecosistema.

Progetti con unità di ricerca italiane in sintesi

Dati complessivi

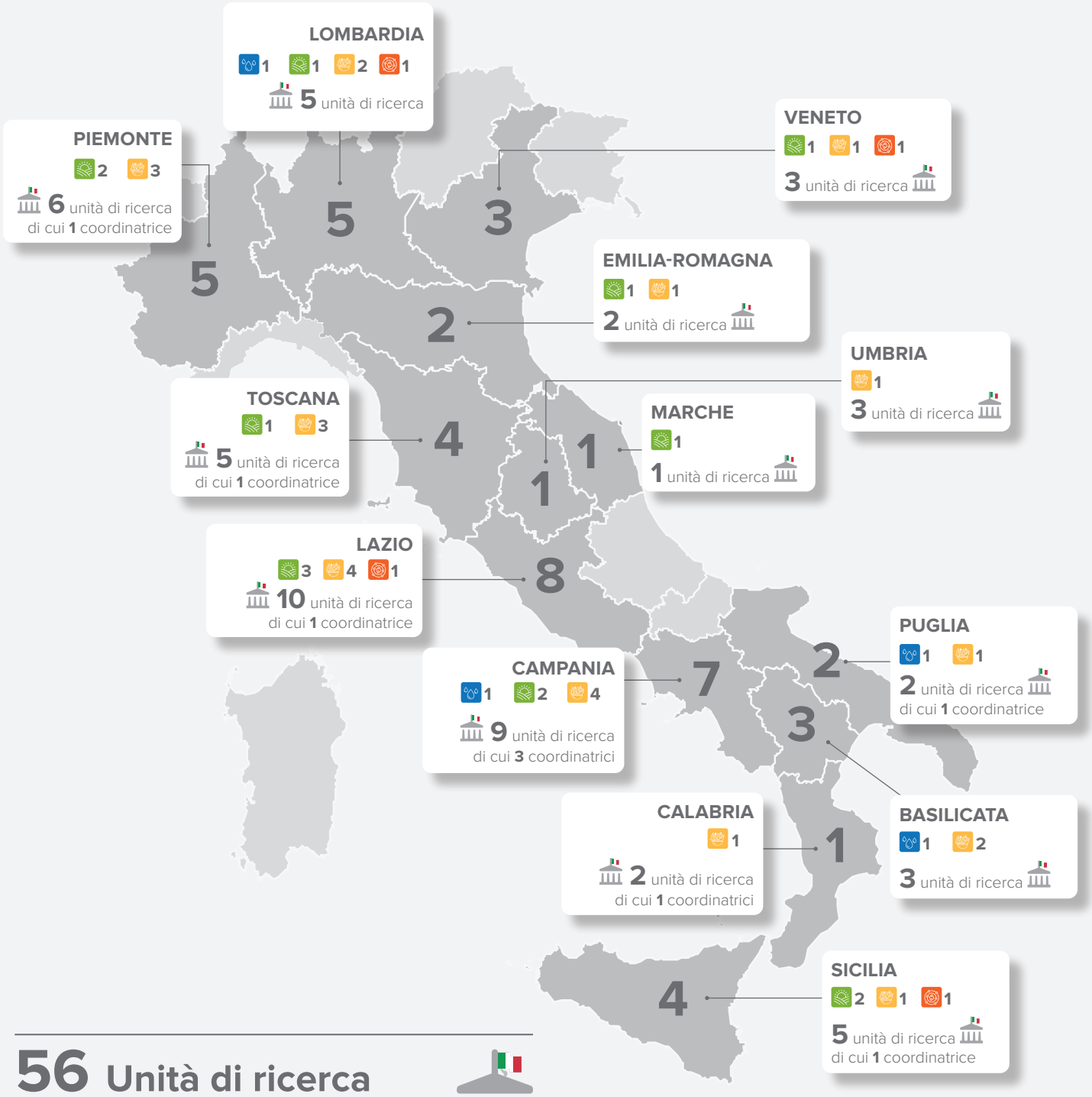
24 Progetti su **36** coinvolgono unità di ricerca italiane

3 5 14 2

Progetti per area tematica

11 Progetti sono coordinati da un'unità di ricerca italiana

Progetti per Regione



56 Unità di ricerca
di cui **8** PMI

Progetti con unità di ricerca italiane in sintesi

Dati complessivi

Progetti per Enti partecipanti

Progetti per area tematica

3

CIRQUA /S1
SPORE-MED /S1
WATER4MED2023 /S2

5

BIOACT2023 /S2
CYCLOLIVE /S2
Sun2Fork /S2
SUPREM-MILK /S2
VENUS 2023 /S1

14

AgriBioPack /S2
BIOMEDPACK /S2
CERERE 2023 /S1
DurInnPack /S2
FoWRSaP /S2
INTACTBioPack /S2
MATE4MEAT /S2
PASPACK 4.0 /S2
PLAMINPACK /S2
QuiPack /S2
SAFOOD4MED /S2
SAPHIRA /S2
SEEDS /S1
STAPLES /S1

3

DYIONISUS /S1
MADNESS /S1
RES-MAB /S1

Enti	Unità di ricerca	Progetto (il nome sottolineato indica Progetto coordinato)
Enti pubblici		
Consiglio Nazionale delle Ricerche (CNR)	Istituto di Scienze delle Produzioni Alimentari (ISPA)	**INTACTBioPack** /S2
	Istituto di Geoscienze e Georisorse (IGG)	**VENUS 2023** /S1
Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA)	Cereals and Industrial Crops	**CERERE 2023** /S1
	Olive, Fruit and Citrus Crops	**SAPHIRA** /S2
Consorzio di Bonifica Adige Euganeo		**VENUS 2023** /S1
Ente Parco Naturale Regionale Veneto Delta del Po		**RES-MAB** /S1
Politecnico di Bari (POLIBA)	Dipartimento di Ingegneria Civile, Ambientale, del Territorio, Edile e di Chimica	**WATER4MED2023** /S2
Politecnico di Milano (POLIMI)	Dipartimento di Ingegneria Gestionale	**STAPLES** /S1
Scuola Superiore Sant'Anna di Pisa	Istituto di Management	**AgriBioPack** /S2
Università Ca' Foscari Venezia (UNIVE)	Dipartimento di Scienze Molecolari e Nanosistemi	**QuiPack** /S2
Università di Roma "Tor Vergata" (UNIROMA2)	Dipartimento di Ingegneria Elettronica	**Sun2Fork** /S2
Università degli Studi di Brescia (UNIBS)	Dipartimento di Ingegneria Civile, Architettura, Territorio, Ambiente e di Matematica (DICATAM)	**BIOACT2023** /S2
Università degli Studi della Basilicata (UNIBAS)	Scuola di Scienze Agrarie, Forestali, Alimentari ed Ambientali	**CIRQUA** /S1
	Scuola di Scienze	**PLAMINPACK** /S2

Università di Bologna (UNIBO) Alma Mater Studiorum	Dipartimento di Scienze Mediche Veterinarie		**SUPREM-MILK** /S2
Università della Calabria (UNICAL)	Dipartimento di Ingegneria Meccanica, Energetica e Gestionale (DIMEG)		**CERERE 2023** /S1
Università di Catania (UNICT)	Dipartimento di Agricoltura, Alimentazione e Ambiente		**DYIONISUS** /S1
Università degli Studi della Campania "Luigi Vanvitelli" (UNICAMPANIA)	Dipartimento di Scienze e Tecnologie Ambientali Biologiche e Farmaceutiche (DISTABiF)		**VENUS 2023** /S1
Università degli Studi di Firenze (UNIFI)	Dipartimento di Scienze e Tecnologie Agrarie, Alimentari, Ambientali e Forestali (DAGRI)		**CYCLOLIVE** /S2
Università degli Studi di Salerno (UNISA)	Dipartimento di Ingegneria Industriale (DIIN)	2	**AgriBioPack** /S2
	Dipartimento di Ingegneria Civile (DICIV)		**SPORE-MED** /S1
Università Mercatorum	Dipartimento di Economia		**SAFOOD4MED** /S2
Università degli Studi di Messina (UNIME)	Dipartimento di Scienze Veterinarie		**Sun2Fork** /S2
Università degli Studi di Milano (UNIMI)	Dipartimento di Scienze e Politiche Ambientali (ESP)		**DurInnPack** /S2
Università Federico II di Napoli (UNINA)	Dipartimento di Medicina Veterinaria e Produzioni Animali	4	**SUPREM-MILK** /S2
	Dipartimento di Scienze Chimiche		**MATE4MEAT** /S2
	Dipartimento di Ingegneria Industriale		**PASPACK 4.0** /S2
	Dipartimento di Agraria		**SEEDS** /S1
Università degli Studi di Perugia (UNIPG)	Dipartimento di Scienze Agrarie, Alimentari ed Ambientali	2	**SAFOOD4MED** /S2
	Dipartimento di Scienze Farmaceutiche		**AgriBioPack** /S2
Università degli Studi Niccolò Cusano	Dipartimento di Ingegneria		**SAPHIRA** /S2
Università di Pisa (UNIPI)	Dipartimento di Scienze Agrarie, Alimentari e Agro-ambientali	2	**FoWRSaP** /S2
	Dipartimento di Ingegneria Chimica		**PLAMINPACK** /S2
Università degli Studi di Scienze Gastronomiche di Pollenzo (UNISG)	Food Innovation and Management		**STAPLES** /S1
Universrità di Roma “La Sapienza”	Dipartimento Ingegneria Chimica Materiali Ambiente		**SAFOOD4MED** /S2
Università di Torino (UNITO)	Dipartimento di Scienze della Vita e Biologia dei Sistemi	3	**BIOACT2023** /S2
	Dipartimento di Scienze Agrarie, Forestali e Alimentari		**BIOMEDPACK** /S2
	Dipartimento di Chimica		**CYCLOLIVE** /S2
Università della Tuscia (UNITUS)	Dipartimento di Scienze Agrarie e Forestali (DAFNE)		**BIOACT2023** /S2

Fondazioni di Ricerca	
Fondazione Collegio Carlo Alberto	**STAPLES** /S1
PMI/ Imprese	
Alter Eco Pulp SRL	**MATE4MEAT** /S2
CAL-TEK S.r.l.	**CERERE 2023** /S1
ENCO SRL	**SEEDS** /S1
Fosan - Ente di Ricerca per lo Studio degli Alimenti e Nutrizione	**MATE4MEAT** /S2
Monitoring and Management of Microbial Resources	**CIRQUA** /S1
RINCI SrL	**VENUS 2023** /S1
Soc. Coop. Agroalimentare e Agroindustriale Del Bradano S.p.a.	**STAPLES** /S1
X Team Srl	**AgriBioPack** /S2
Altri Privati	
Almaviva The Italian Innovation Company S.p.A.	**DYIONISUS** /S1
Associazione Nazionale Allevatori Specie Bufalina	**SUPREM-MILK** /S2
Caudarella	**VENUS 2023** /S1
Consorzio di Tutela Arancia Rossa di Sicilia IGP	**DYIONISUS** /S1
Fondazione Slow Food- E.T.S	**CERERE 2023** /S1
Future Food Institute ETS	**SEEDS** /S1
Istituto Oikos E.T.S.	**RES-MAB** /S1
Next Technology	**PLAMINPACK** /S2

Progetti con unità di ricerca italiane

Sezione1

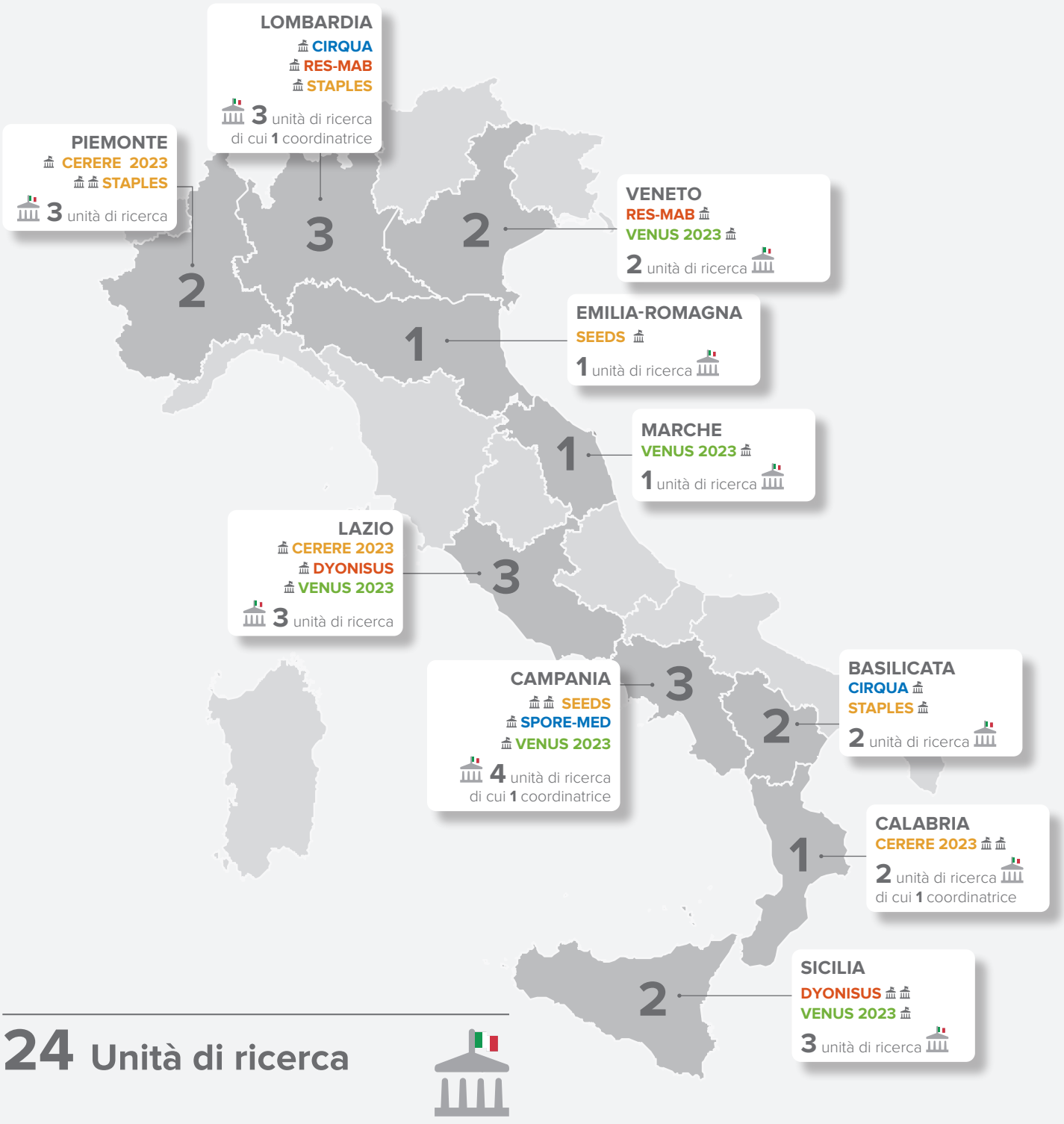
2 1 3 2

Progetti per area tematica

8 Progetti su 9
coinvolgono unità di ricerca italiane

3 Progetti
sono coordinati da un'unità di ricerca italiana

Progetti per Regione



24 Unità di ricerca

Progetti con unità di ricerca italiane in sintesi

Sezione1

Progetti per area tematica

CIRQUA
SPORE-MED

VENUS 2023

CERERE 2023
SEEDS
STAPLES

DYONISUS
RES-MAB

Water Management

Progetto	Enti	Unità di ricerca/ Referente	
CIRQUA	Università degli Studi della Basilicata (UNIBAS)	Scuola di Scienze Agrarie, Forestali, Alimentari ed Ambientali DROSOS, Marios	Potenza BASILICATA
	Monitoring and Management of Microbial Resources	TATIANA, Stella	Milano LOMBARDIA
SPORE-MED	Università degli Studi di Salerno (UNISA)	Dipartimento di Ingegneria Civile (DICIV) NADDEO, Vincenzo	Salerno CAMPANIA

Farming Systems

Progetto	Enti	Unità di ricerca/ Referente	
VENUS 2023	Università degli Studi della Campania "Luigi Vanvitelli" (UNICAMPANIA)	Dipartimento di Scienze e Tecnologie Ambientali Biologiche e Farmaceutiche (DISTABiF) MASTROCICCO, Micol	Caserta CAMPANIA
	Rinci srl	GALEAZZI, Luca	Castelfidardo, Ancona MARCHE
	Caudarella	RUSSO, Michele	Caltagirone, Catania SICILIA
	Istituto di Geoscienze e Georisorse (IGG) Consiglio Nazionale delle Ricerche (CNR)	TOSI, Luigi	Roma LAZIO
	Consorzio di Bonifica Adige Euganeo	FRISON, lorenzo	Este, Padova VENETO

Agri-Food Value Chain

Progetto	Enti	Unità di ricerca/ Referente	
CERERE 2023	**Università della Calabria (UNICAL)**	Dipartimento di Ingegneria Meccanica, Energetica e Gestionale (DIMEG) PADOVANO, Antonio	Bologna EMILIA-ROMAGNA
	CAL-TEK S.r.l.	LONGO, Francesco	Rende, Cosenza CALABRIA
	Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA)	Cerealicoltura e Colture Industriali MARONE, Daniela	Roma LAZIO
	Slow food ETS	ROVEGLIA, Paola	Bra, Cuneo PIEMONTE
SEEDS	**ENCO srl**	SAIDI, Ahmed	Napoli CAMPANIA
	Università Federico II di Napoli (UNINA)	Dipartimento di Agraria CICIA, Giovanni	Napoli CAMPANIA
	Future Food Institute ETS	LEONARDUZZI, Maria	Bologna EMILIA-ROMAGNA
STAPLES	**Politecnico di Milano (POLIMI)**	Dipartimento di Ingegneria Gestionale CANIATO, Federico	Milano LOMBARDIA
	Fondazione Collegio Carlo Alberto	GIOVANNETTI, Giorgia	Torino PIEMONTE
	Università degli Studi di Scienze Gastronomiche di Pollenzo (UNISG)	Food Innovation and Management SACCONE, Donatella	Pollenzo, Cuneo PIEMONTE
	Societa Cooperativa Agroalimentare ed Agroindustriale del Bradano	CICORIA, Nicola	Palazzo San Gervasio, Potenza BASILICATA

Nexus

Progetto	Enti	Unità di ricerca/ Referente	
DYONISUS	Almaviva The Italian Innovation Company S.p.A.	RAFFONE, Alessandra	Roma LAZIO
	Consorzio di Tutela Arancia Rossa di Sicilia IGP	ALBERTINI, Elena Eloisa	Catania SICILIA
	Università di Catania (UNICT)	Dipartimento di Agricoltura Alimentazione e Ambiente CONSOLI, Simona	Catania SICILIA
RES-MAB	Ente Parco Naturale Regionale Veneto Delta del Po	GASPARINI, Moreno	Ariano Polesine, Rovigo VENETO
	Istituto Oikos	SONZOGNI, Cristina	Milano LOMBARDIA

Progetti con unità di ricerca italiane

Sezione2

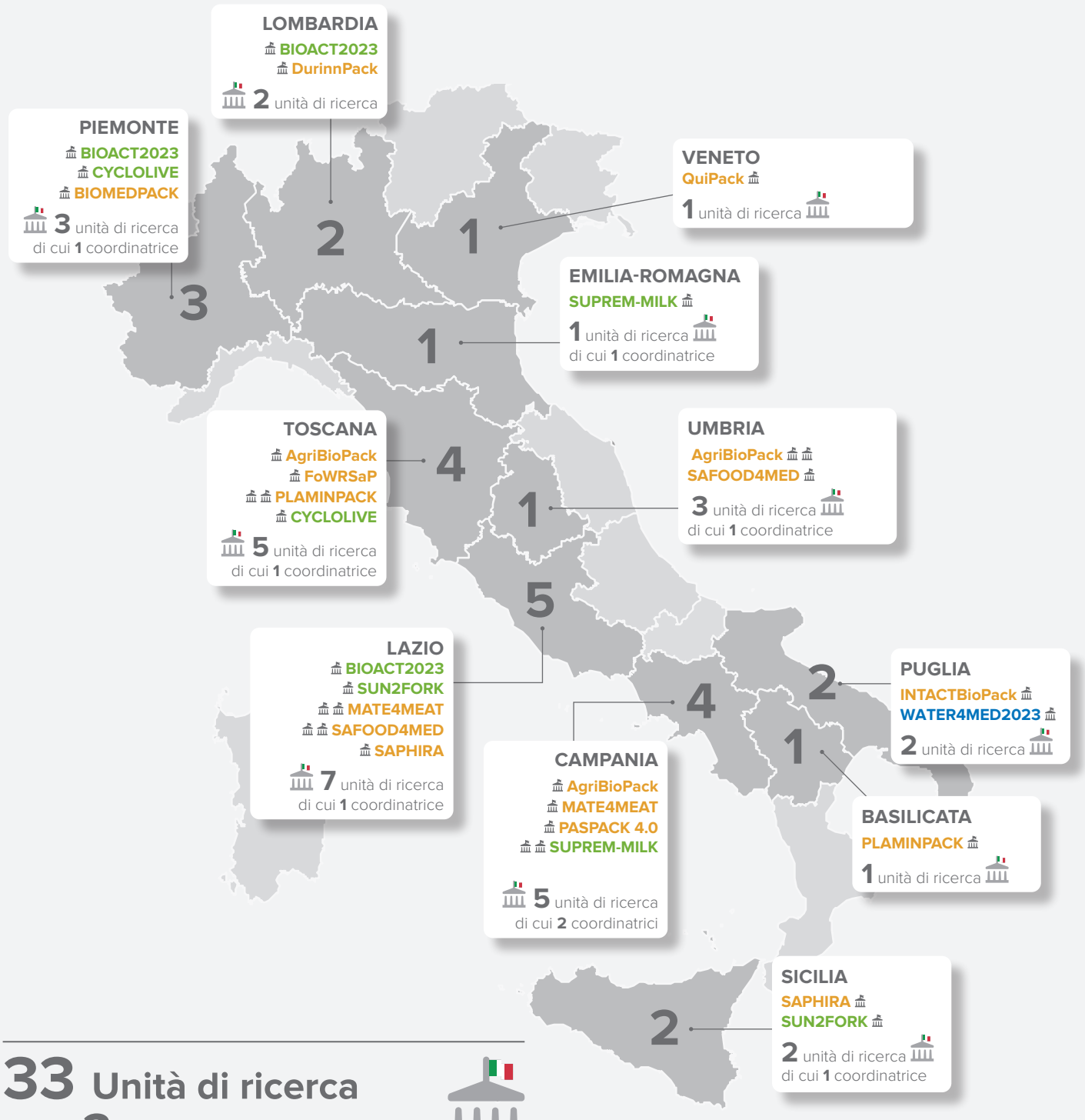
1 4 11

Progetti per area tematica

16 Progetti su 27
coinvolgono unità di ricerca italiane

8 Progetti
sono coordinati da un'unità di ricerca italiana

Progetti per Regione



33 Unità di ricerca
di cui **3 PMI**

Progetti con unità di ricerca italiane in sintesi

Sezione2

Progetti per area tematica

1
WATER4MED2023

5
BIOACT2023
CYCLOLIVE
Eco-FertiS
SUN2FORK
SUPREM-MILK

11
AgriBioPack
BIOMEDPACK
DurInnPack
FoWRSaP
INTACTBioPack
MATE4MEA
PASPACK 4.0
PLAMINPACK
QuiPack
SAFOOD4MED
SAPHIRA

Water Management

Progetto	Enti	Unità di ricerca/ Referente	
WATER4MED2023	Politecnico di Bari (POLIBA)	Dipartimento di Ingegneria Civile, Ambientale, del Territorio, Edile e di Chimica BALACCO, Gabriella	Bari PUGLIA

Farming Systems

Progetto	Enti	Unità di ricerca/ Referente	
BIOACT2023	**Università di Torino (UNITO)**	Dipartimento di Scienze della Vita e Biologia dei Sistemi VIGANI, Gianpiero	Torino PIEMONTE
	Università della Tuscia (UNITUS)	Dipartimento di Scienze Agrarie e Forestali (DAFNE) ASTOLFI, Stefania	Viterbo LAZIO
	Università degli Studi di Brescia (UNIBS)	Dipartimento di Ingegneria Civile, Architettura, Territorio, Ambiente e di Matematica (DICATAM) GOBBI, Emanuela	Brescia LOMBARDIA
CYCLOLIVE	Università degli Studi di Firenze (UNIFI)	Dipartimento di Scienze e Tecnologie Agrarie, Alimentari, Ambientali e Forestali (DAGRI) GIORDANI, Edgardo	Firenze TOSCANA
	Università di Torino (UNITO)	Dipartimento di Chimica BRUZZONITI, Maria	Torino PIEMONTE
SUN2FORK	**Università degli Studi di Messina (UNIME)**	Dipartimento di Scienze Veterinarie GRESTA, Fabio	Messina SICILIA
	Università di Roma "Tor Vergata" (UNIROMA2)	Dipartimento di Ingegneria Elettronica VESCE, Luigi	Roma LAZIO
SUPREM-MILK	**Università di Bologna (UNIBO) Alma Mater Studiorum**	Dipartimento di Scienze Mediche Veterinarie COSTA, Angela	Bologna EMILIA-ROMAGNA
	Università Federico II di Napoli (UNINA)	Dipartimento di Medicina Veterinaria e Produzioni Animali GASPARRINI, Bianca	Napoli CAMPANIA
	Associazione Nazionale Allevatori Specie Bufalina	CIMMINO, Roberta	Caserta CAMPANIA

Agri-Food Value Chain

Progetto	Enti	Unità di ricerca italiane	
AgriBioPack	**Università degli Studi di Salerno (UNISA)**	Dipartimento di Ingegneria Industriale (DIIN) DONSÌ, Francesco	Salerno CAMPANIA
	Università degli Studi di Perugia (UNIPG)	Dipartimento di Scienze Farmaceutiche COSSIGNANI, Lina	Perugia UMBRIA
	Scuola Superiore Sant'Anna di Pisa	Istituto di Management TESTA, Francesco	Pisa TOSCANA
	X Team Srl	MAIETTINI, Lucio	Perugia UMBRIA
BIOMEDPACK	Università di Torino (UNITO)	Dipartimento di Scienze Agrarie, Forestali e Alimentari RANTSIOU, Kalliopi	Torino PIEMONTE
DurInnPack	Università degli Studi di Milano (UNIMI)	Dipartimento di Scienze e Politiche Ambientali (ESP) BACENETTI, Jacopo	Milano LOMBARDIA
FoWRSaP	Università di Pisa (UNIPI)	Dipartimento di Scienze Agrarie, Alimentari e Agro-ambientali CONTI, Barbara	Pisa TOSCANA
INTACTBioPack	Consiglio Nazionale delle Ricerche (CNR)	Istituto di scienze delle produzioni alimentari (ISPA) CAPOZZI, Vittorio	Bari PUGLIA
MATE4MEA	**Università Federico II di Napoli (UNINA)**	Dipartimento di Scienze Chimiche PISCITELLI, Alessandra	Napoli CAMPANIA
	Fosan - Ente di Ricerca per lo Studio degli Alimenti e Nutrizione (FOSAN)	BUCARELLI, Francesco	Roma LAZIO
	Alter Eco Pulp SRL	CORAZZI, Claudia	Tivoli, Roma LAZIO
PASPACK 4.0	Università Federico II di Napoli (UNINA)	Dipartimento di Ingegneria Industriale CENTOBELLI, Piera	Napoli CAMPANIA
PLAMINPACK	**Università di Pisa (UNIPI)**	Dipartimento di Ingegneria Chimica COLTELLI, Maria-Beatrice	Pisa TOSCANA
	Università degli Studi della Basilicata (UNIBAS)	Scuola di Scienze FALABELLA, Patrizia	Potenza BASILICATA
	Next Technology	SPINELLI, Daniele	Prato TOSCANA
QuiPack	Università Ca' Foscari Venezia (UNIVE)	Dipartimento di Scienze Molecolari e Nanosistemi SALVATORE, Giovanni Antonio	Venezia VENETO
SAFOOD4MED	**Università degli Studi di Perugia (UNIPG)**	Dipartimento di Scienze Agrarie, Alimentari ed Ambientali DE FRANCESCO, Giovanni	Perugia UMBRIA
	Universitas Mercatorum (UNIM)	Dipartimento di Economia SILEONI, Valeria	Roma LAZIO
	Universrità di Roma “La Sapienza”	Dipartimento Ingegneria Chimica Materiali Ambiente TIRILLO, Jacopo	Roma LAZIO
SAPHIRA	**Università degli Studi Niccolò Cusano**	Dipartimento di Ingegneria CACCIOTTI, Ilaria	Roma LAZIO
	Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA)	Olivicoltura, Frutticoltura e Agrumicoltura (CREA-OFA) CARBONE, Katya	Caserta CAMPANIA

Overview Italia
2018-2023

183 / 238

Progetti finanziati
coinvolgono unità di ricerca italiane

di cui

81

Progetti coordinati
da un'unità di ricerca italiana

39 73 62 9

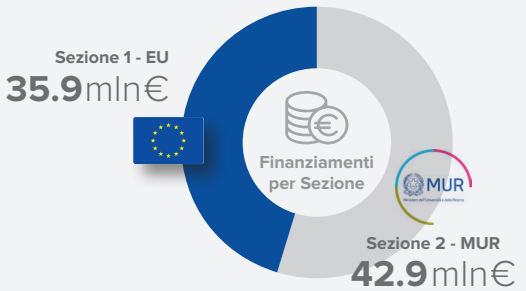
Progetti per area tematica

57 Sezione 1 **126** Sezione 2

Progetti per sezione

78.8 mln€ / 349.6

Finanziamenti totali

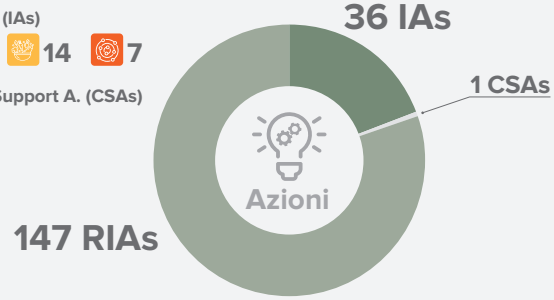


Azioni

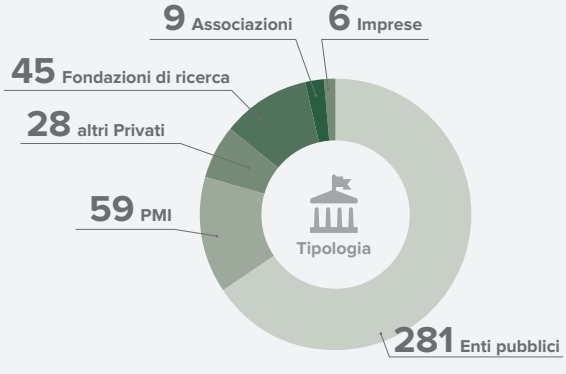
Research and Innovation Actions (RIAs)
32 65 48 1

Innovation Actions (IAs)
7 8 14 7

Coordination and Support A. (CSAs)
1



388 Unità di ricerca /2290



2018

28 /35
Progetti finanziati
di cui
11
Progetti coordinati

9 11 8
Progetti per area tematica

51 **Unità di ricerca**

9.8 mln€

2019

34 /48
Progetti finanziati
di cui
16
Progetti coordinati

6 15 11 2
Progetti per area tematica

70 **Unità di ricerca**

12 mln€

2020

35 /46
Progetti finanziati
di cui
16
Progetti coordinati

5 18 10 2
Progetti per area tematica

84 **Unità di ricerca**

16.1 mln€

2021

32 /39
Progetti finanziati
di cui
17
Progetti coordinati

5 19 6 2
Progetti per area tematica

67 **Unità di ricerca**

13.8 mln€

2022

30 /34
Progetti finanziati
di cui
10
Progetti coordinati

11 5 13 1
Progetti per area tematica

58 **Unità di ricerca**

13.1 mln€

2023

24 /36
Progetti finanziati
di cui
11
Progetti coordinati

3 5 14 2
Progetti per area tematica

56 **Unità di ricerca**

14 mln€

Progetti finanziati 2023

Progetti coordinati da unità di ricerca italiane

I Progetti sono in ordine per area tematica (Water Management; Farming Systems; Agri-food Value Chain; Nexus). All'interno di ciascuna area tematica, sono illustrati prima i Progetti di Sezione 1 e poi quelli di Sezione 2.

Area tematica

Farming Systems

Azione e Topic

(RIA) A step toward carbon-neutral farms: coupling renewable energy sources with circular farming systems

Budget

1.187.306 €

Durata

42

Paese ed Ente coordinatore

ITALIA
Università di Torino

UNIVERSITÀ DI TORINO

Coordinatore scientifico:
VIGANI, Gianpiero

Paesi partecipanti/ 5

Unità di ricerca/ 7

Sezione 2

BIOACT

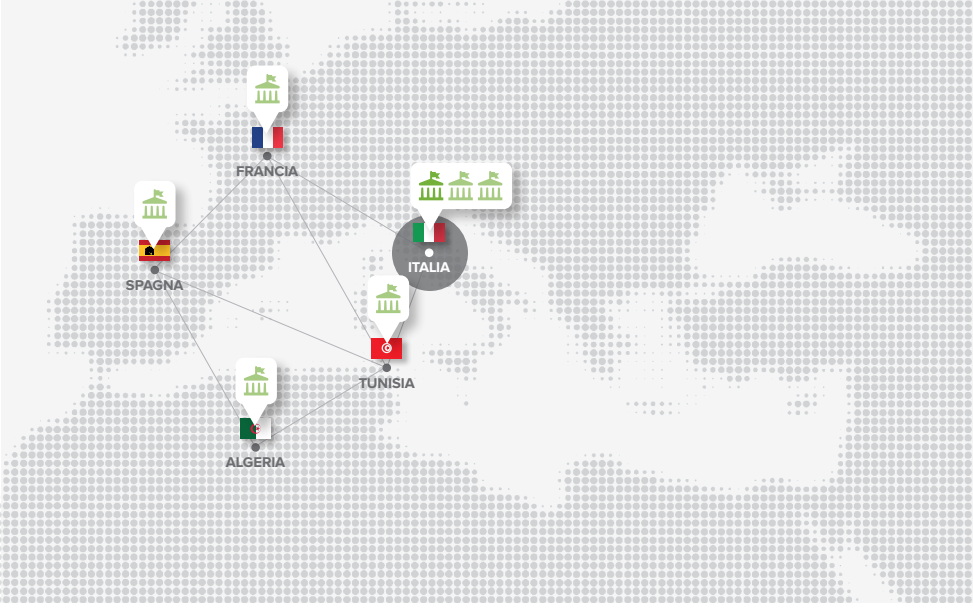
Benefits assessment of on-farm regenerative agricultural practices on durum wheat systems to promote climate emergy-based sustainability and food security in the Mediterranean area

Contesto

The project, which falls on the spectrum from 'idea to application', will be carried out by an interdisciplinary team of universities for the research and innovation activities, with the direct participation of a company for the ICT solutions, and external support of food and packaging manufacturers, for a multi-actor approach towards the development of novel packaging solutions and new products of interest for the Mediterranean local communities, involved also through specific market analysis and business plans adapted to their needs.

Obiettivi e contenuti

The overall objective of AgriBioPack is to develop bio-based active packaging solutions (films, mats, and coatings) that can modulate the microbiome in Mediterranean products, hence contributing to improving their marketability by extending their shelf life and reducing food waste. More specifically, the bio-based packaging solutions will be derived from agrifood residues, both for the structural and functional components. This ambitious objective will be pursued by AgriBioPack by (1) ranking in a sharable database the most promising Med agrifood residues (for supply chain, composition and functionality of the main components), (2) extracting valuable molecules and/or (3) microbiome from the residues through green technologies or fermentation processes, (4) optimizing the formulation of bio-based and biodegradable packaging (starting from PLA and pea proteins as basis), using the recovered extracts with reinforcing or antimicrobial properties, (5) evaluating the performance and safety of the developed packaging solutions in extending the shelf life of Med food products (meat, fish, fruit), (6) developing ICT solutions to reduce food waste through in-pack sensors and apps, and (7) assessing the environmental impact and the economic feasibility of the newly developed products.



Enti italiani partecipanti/ 2

Università della Tuscia (UNITUS)
Università degli studi di Brescia

Altri Enti partecipanti/ 4

Ecole Nationale Supérieure Agronomique (ENSA) - AL

Universitat Jaume I Castellón - ES

Institut de recherche pour le developpement (IRD) - FR

Center of Biotechnology of Sfax - TN

Risultati e impatti attesi

AgriBioPack will develop bio-based packaging solutions for Mediterranean foods, such as poultry meat, fish fillets and burgers, intermediate-moisture fruits, and fruit bars. By using sustainable materials from agrifood residues through mild processing technologies, it is expected to reduce the environmental impact of food packaging while maintaining high standards of food safety and quality. The project will promote the development of new environmentally-friendly techniques to reduce food waste. Several agrifood residues are investigated as starting materials to fully exploit the functionality of the different components. After the preliminary screening, the efficacy of the optimized bio-based materials for packaging will be demonstrated, with the expected output to improve food safety (SRIA, priority 3.2) and reduce food waste that meets market requirements. The project awareness and dissemination activities are designed to showcase a new positive paradigm of innovation, in which traditional local and diversified products are valorized (priority 3.1), the activities of local food companies are promoted, and the health benefits of traditional ingredients are amplified. Consumers' awareness will have an impact on food, health, societal and cultural education and will renew the growth/competitiveness of the industries of healthy food products (priority 3.3). The project will influence policymakers, as need analysis, cutting-edge technologies, quality control approaches, and scientific findings of impact on public health will all be shared with regulatory agencies and public authorities. Overall, the proposed approach can be considered as fully aligned with the Agro-Food Value Chain 2022 and the topic 2.3.

Area tematica

Farming Systems

Azione e Topic

(RIA) A step toward carbon-neutral farms: coupling renewable energy sources with circular farming systems

Budget

838.392,50 €

Durata

36

Paese ed Ente coordinatore

ITALIA

Università di Messina

Università degli Studi di Messina

Coordinatore scientifico:
GRESTA, Fabio

Paesi partecipanti/ 6

Unità di ricerca/ 8

Sezione 2

Sun2Fork

Sustainable greenhouse farming systems: from sun to fork

Contesto

The overall aim Sun2Fork is to develop an integrated greenhouse farming system through the adoption of technological and innovative approaches and sustainable resources to improve the sustainability of Mediterranean greenhouse farming systems and reduce production costs, contributing to mitigate and adapt to climate change.

Obiettivi e contenuti

The objective is the integration of the synergic activity between the consortium expertise and the farmer experiences and needs, into a sustainable model-guided process. The specific objectives of Sun2Fork are:

SO1. To maximize the efficiency of organic and hybrid photovoltaic solar panels through the optimization of the trade-off between transparency and efficiency.

SO2. To reduce water consumption through the development of a highly efficient and sustainable closed-and-recirculation irrigation systems coupled with desalination and sterilization processes.

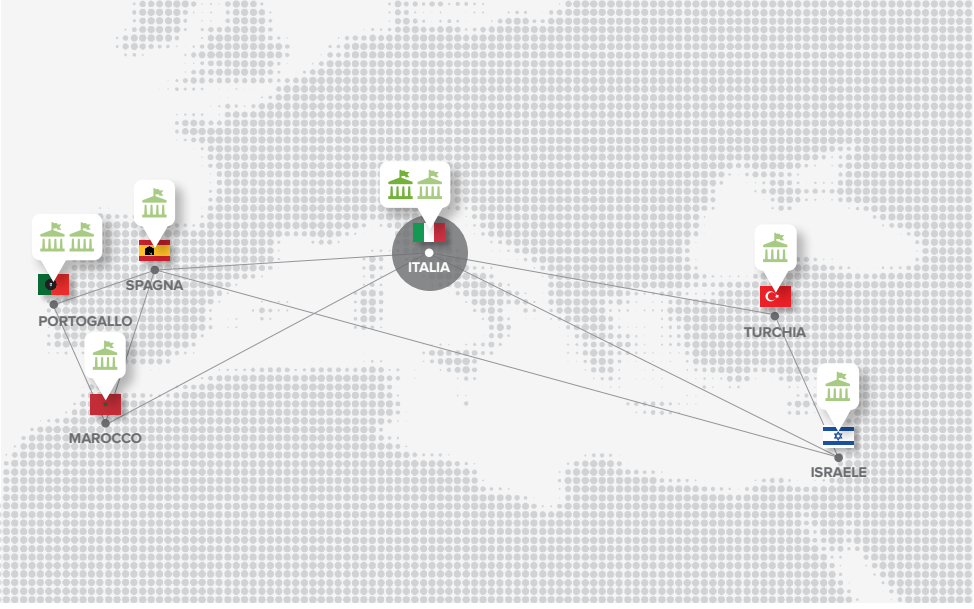
SO3. To develop novel eco-friendly substrates for hydroponic cultivation.

SO4. To optimized biostimulants and PGPB that maximize crop performance in soilless systems.

SO5. To integrate sensors for climate control, irrigation and fertilization in a hydroponic greenhouse by means of artificial-intelligence and deep learning.

SO6. Individuate new resilient crop(s) with better tolerance to biotic and abiotic stress in the Mediterranean area

SO7. To demonstrate the advanced, integrated results of the project in a greenhouse prototype merging all the innovations obtained in the project for an optimum training and exploitation of results among agricultural final users.



Enti italiani partecipanti/ 1

Università degli Studi di Roma "Tor Vergata"

Altri Enti partecipanti/ 6

University of Almería (UAL) ES

Agricultural Research Organization (ARO) - IL

University of Sultan Moulay Slimane - MR

European Bioproducts Research Institute (EBRI) - PT

Universidade Católica Portuguesa, (UCP) - PT

Ege University (Ege) - TR

SO8. To perform the integrated life cycle sustainability assessment, covering all pillars of sustainability (social and economic LCA).

SO9. To disseminate the project and its results towards stakeholders, as well as promote the exploitation and commercialization of key exploitable results including the development of a new business model.

The objectives of Sun2Fork will be achieved through collaboration with research institutions, farmers, private industries, stakeholders, and citizens.

Risultati e impatti attesi

Sun2Fork promotes the use of renewable energy in agreement with the SET Plan which estimates that PV has the potential to meet 15% of the EU electricity demand in 2030. If this will be achieved, then this would result in a considerable reduction of CO2 emissions (carbon footprint of PV systems is at least 10 times lower than that of fossil fuel-based electricity).

In this respect, and according to the expected impact of Topic 2.2.1 (A step toward carbon-neutral farms: coupling renewable energy sources with circular farming systems), Sun2Fork Consortium will develop a greenhouse system which will assist in the reduction of power derived from burning fossil fuels, hence improving the climate and the environment.

Sun2Fork will contribute to the KPI1 and KPI2 through the creation of a sustainable production system (solar energy, eco-friendly substrates, water saving, pesticide reduction) in accordance with the objectives of the Sustainable Development Goals (SDGs) of the United Nations, such as the SDG2, SDG7, SDG12, SDG13. Sun2Fork will also contribute to achieving the targets of the following European policies, directives and roadmaps: Sustainable development, European Green Deal, Circular Economy Action Plan, Water Reuse Regulation, Regenerative agriculture.

Area tematica

Farming Systems

Azione e Topic

(RIA) A step toward carbon-neutral farms: coupling renewable energy sources with circular farming systems

Budget

1.447.837,13 €

Durata

36

Paese ed Ente coordinatore

ITALIA
Alma Mater Studiorum Università di Bologna

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

Coordinatore scientifico:
COSTA, Angela

Paesi partecipanti/ 5

Unità di ricerca/ 9

Sezione 2

Suprem-Milk

Towards a more sustainable and resilient Mediterranean milk supply chain

Contesto

SUPREM-MILK aims to provide concrete tools and propose customized and targeted solutions to support farmers of Egypt, Morocco, and Turkey to take a step towards a net zero carbon and greener and more circular farming. During the transition, the 3 forms of sustainability will be maximised and the resilience and self-sufficiency of the Mediterranean milk supply chain will be considered.

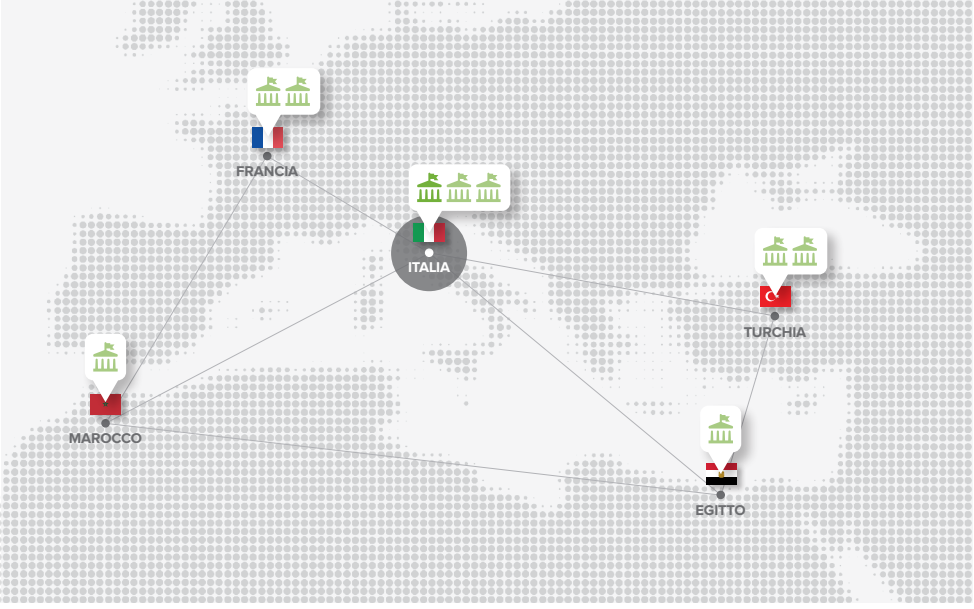
Obiettivi e contenuti

In agreement with the specific challenges and scopes of the call, the main objectives are:

1 Preliminary inventory of the carbon cycle and characterization of sustainability of the milk supply chains studied. Life cycle assessment, sensors data, machine learning, remote sensing (Sentinel-2), and omics approaches will be used to evaluate the starting point of different scenarios and plan customized actions and solutions towards the desired direction(s).

2 Support the adoption and implementation of sustainable technologies, novel applications and best practices by local farmers. Transfer of knowledge, establishment of decision-support systems, definition of best practices/most recommended guidelines, and installation of open access digital applications/ platforms will contribute to improve decision-making and informed choice of all stakeholders, especially those in underserved areas/condition with scarce access to technologies, e.g., smallholder farmers and women active in dairy.

3 End-point evaluation of the carbon balance, sustainability, self-sufficiency, and competitiveness of the milk supply chains considered. Multi-actor estimation of the impacts of the incorporated improvements; i.e. cost-benefit analysis, life cycle assessment, circularity level. All stakeholders of the chain will be considered: land (soil), animals, farmers, producers, and consumers.



Enti italiani partecipanti/ 2

Università degli Studi di Napoli Federico II, UNINA

Associazione Nazionale Allevatori Specie Bufalina, ANASB

Altri Enti partecipanti/ 7

Animal Reproduction Research Institute, Agricultural Research Center (ARRI - ARC) - EG

Unilasalle - FR

INRAE UMR SADAPT (INRAE) - FR

Ibn Tofail University (UIT) - MR

Istanbul University-Cerrahpasa (IUC) - TR

Ankara University - TR

Risultati e impatti attesi

SUPREM-MILK will exploit an horizontal approach to customize and implement innovative tools that can rapidly improve nutrients circularity, self-sufficiency, and sustainability of Egyptian, Moroccan, and Turkish milk supply chain.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Increasing agri-food supply chain (cereal) resilience in the MENA region

Budget

2.750.000 €

Durata

36 mesi

Paese ed Ente coordinatore

ITALIA

University of Calabria

UNIVERSITÀ DELLA CALABRIA

Coordinatore scientifico:
PADOVANO, Antonio

Paesi partecipanti/ 7

Unità di ricerca/ 10

Sezione 1

Cerere

CEreals REsiliency REvolution for agile supply chain management in the Mediterranean

Contesto

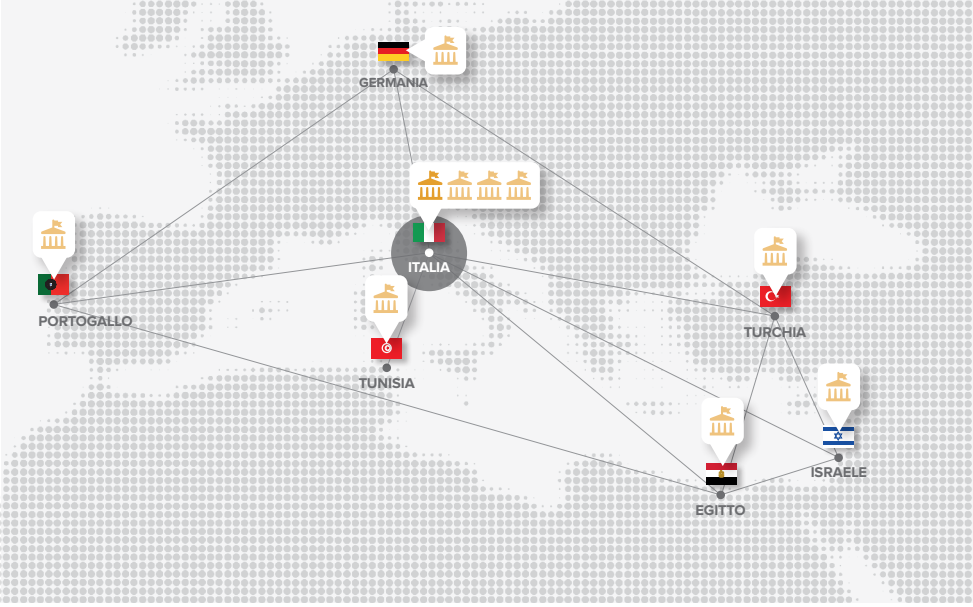
Over the past years, supply chains (SCs) resembled less a line of dominoes and evolved into an intertwined supply network (ISN). CERERE's major goal is to increase the resilience and ensure the viability of the cereals ISN (C-ISN) and related food systems in MENA countries through the achievement of 4 specific objectives:

1. To map and assess the resilience and viability of the Mediterranean cereal ISN to identify critical dependencies between actors and detect, analyse and predict vulnerabilities.
2. To design and develop an intelligent nerve centre to be used for resilient network design space exploration via experimentation and for the agile orchestration of the cereal ISN.
3. To cultivate a Mediterranean resilience-minded culture and localized experiences for creating fertile socio-cultural soil for future disruption-proof C-ISNs.
4. To derive a list of good practices and evidence-based recommendations for organisations and policy-makers to build viable and resilient agri-food ISNs in the Mediterranean region.

Obiettivi e contenuti

To achieve these objectives, CERERE will deliver solid scientific theoretical advances and increase of know-how and practical knowledge. CERERE is inspired by the OECD principles for building resilient supply chains: open markets and collaboration, risk anticipation and minimisation of exposure, and end-to-end (E2E) visibility and trust. Such aspects will be concurrently investigated within four pillars (4Ps): products, processes, technology prototypes, people.

First, three specific cereal varieties will be analysed as focus of our case



Enti italiani partecipanti/ 3

CAL-TEK S.r.l.

Council for Agricultural Research and Economics, Research Centre for Cereal and Industrial Crops, CREA

Fondazione Slow Food- E.T.S

Altri Enti partecipanti/ 6

Berlin School of Economics and Law (HWR) - DE

The American University in Cairo (AUC) - EG

Nurego - General Electric Research (NUR) - IS

Iscte - Instituto Universitário de Lisboa (ISCTE) - PT

SQLI Services Tunisia (SQLI) - TN

Field Crops Central Research Institute, Ministry of Agriculture and Forestry (TARM) TR

studies (product pillar): common and durum wheat, and barley. Two pilots will be conducted in two Countries, one in the North Africa region (Egypt) and the other in the Middle East (Turkey). Second, a structural and vulnerability analysis of the cereal supply chain in Egypt and Turkey (and, by large, in the Mediterranean area) will be conducted to derive evidence-based policy recommendations and guidelines (process pillar). Third, a Software as a Service platform prototype will be designed using a participatory approach and developed as a solution to increase the resilience and/or ensure the viability of the cereal ISN (technology prototype pillar). It will include a number of innovative models and solutions, including: 1) an open-source middleware and data model for smart agriculture; 2) a persistent multi-scale and multi-paradigm simulation-based digital twin; 3) an AI-based intelligent nerve centre enriched by a cognitive human interface for agile ISN orchestration; 4) an Internet of Things Starter kit for Smart Farming; 5) an early warning system for supply network vulnerability prediction; 6) a web application to enable individuals and organisations to join the digital cereal ISN; 7) a distributed data fabric architecture for connecting multiple data sources and a situation awareness module to process, fuse and make sense of such data. Finally, a report with business models and recommended organizational/socio-cultural changes required to sustain the CERERE framework, a report about knowledge maturity and digital readiness of agri-food businesses in the MENA countries, as well as education and training material will be developed (people pillar).

Risultati e impatti attesi

In line with PRIMA goals, CERERE will contribute to generate the following impacts: 1) increase understanding, transparency and predictability of cereal SC performance; 2) promote a risk-based approach to cereals SC management; 3) promote successful management practices in local food environments in the MENA region; 4) promote an agile cereal SC management in the Mediterranean area; 5) reduce uncertainty in SC risk management and enable mitigation capability to SC actors; 6) accelerate

technology and innovation uptake by smallholders and farmers to gain competitive advantage and achieve better performance.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Increasing agri-food supply chain (cereal) resilience in the MENA region

Budget

2.748.875 €

Durata

36 mesi

Paese ed Ente coordinatore

ITALIA
Enco srl

Coordinatore scientifico:
SAIDI, Ahmed

Paesi partecipanti/ 7

Unità di ricerca/ 16

Sezione 1

Seeds

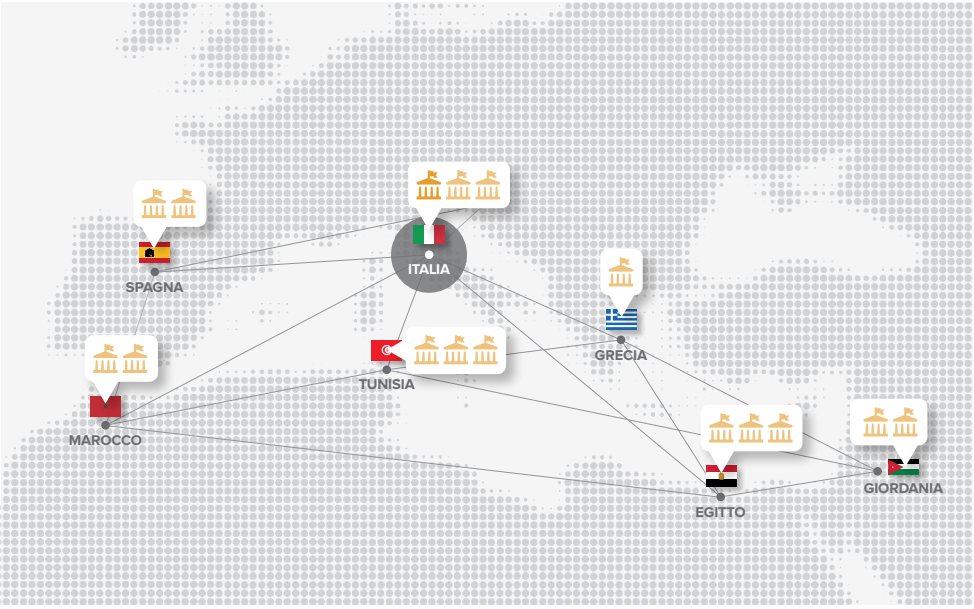
Sustaining Economies and Enhancing Dynamic Structures

Contesto

Le projet SEEDS vise à renforcer la résilience de la chaîne d'approvisionnement agroalimentaire en céréales dans la région MENA et à relancer l'utilisation de céréales antiquesen testant l'adaptabilité de ces grains aux conditions climatiques actuelles, aux ravageurs et aux maladies. Cet objectif global sera poursuivi en évaluant et en co-développant des recommandations fondées sur des preuves pour accroître la résilience de la chaîne d'approvisionnement et la numériser via une plateforme axée sur l'utilisateur dans quatre pays de la région MENA, à savoir la Tunisie, l'Égypte, le Maroc et la Jordanie.

Obiettivi e contenuti

SEEDS fournira des stratégies et des bonnes pratiques sur la façon d'utiliser les céréales antiques pour renforcer la résilience des chaînes de valeur locales, créer des synergies entre les parties prenantes, numériser la chaîne d'approvisionnement et créer des alertes en cas de chocs pouvant perturber les structures du sefteur cerealier. SEEDS utilisera une analyse multicritères pour évaluer et co-développer des recommandations fondées sur des preuves à travers une boîte à outils de conception d'interventions visant à accroître la résilience de la chaîne d'approvisionnement. Cela aidera à garantir que les chaînes d'approvisionnement sont résilientes aux chocs externes et que les structures de la chaîne de valeur sont numérisées pour améliorer l'efficacité et la transparence. De plus, SEEDS utilisera des laboratoires vivants pour évaluer et construire les meilleures pratiques et recommandations fondées sur des preuves en utilisant les connaissances et les expériences antérieures en impliquant les communautés locales, les agriculteurs, les entreprises et d'autres parties prenantes. Les laboratoires vivants définiront également le réseau de la chaîne de valeur des céréales dans chaque pays, construiront le modèle AKIS pour un meilleur transfert de connaissances entre les



Enti italiani partecipanti/ 2

Università degli Studi di Napoli - FEDERICO II (UNINA)

Future Food Institute ETS (FFI)

Altri Enti partecipanti/ 13

Agricultural Research Center (ARC) - EG

Confederation of Egyptian European Business Associations (CEEBA) - EG

Healthtech (Healthtech) - EG

Centro Nacional de Tecnología y Seguridad Alimentaria (CNTA) - ES

Technological Centre. Packaging, Transport and Logistics (ITENE) - ES

Centre for Research & Technology Hellas (CERTH) - HE

National Agricultural Research Center (NARC) - JR

Gulf Industrial Development Company, South Amman Mills Laboratory - (GIDC) - JR

Agronomic and Veterinary Institute Hassan II (IAV) - MR

African Center for Innovation in Agro-food and Cosmetics (CAIAC) - MR

National Institute for Agricultural Research Tunisia (INRAT) - TN

National Institute of Field Crops (INGC) - TN

Comptoir Multiservices Agricole, Rose Blanche (CMA) - TN

différentes parties prenantes. Cette approche aidera à développer des solutions innovantes qui peuvent résister aux chocs externes et favoriser le développement d'environnements alimentaires locaux en offrant des

options plus saines et durables pour ce produit de base.Le projet vise à mettre en oeuvre une plateforme numérique conviviale, accessible et inclusive pour le suivi des cultures en utilisant Copernicus/données locales, des capteurs sur le marché pour surveiller la température, l'humidité et certains gaz tels que le méthane, le CO2, le N2, etc. fourniront des informations utiles sur les conditions climatiques entre autres, et ils pourraient également être connectés avec les prévisions météorologiques, Meteostat, etc, une chaîne d'approvisionnement intelligente où les parties prenantes peuvent efficacement s'interconnecter, et enfin reproduire le modèle AKIS dans les pays du sud de la Méditerranée pour améliorer le partage des connaissances et le numériser à travers une plateforme conviviale.

Risultati e impatti attesi

SEEDS est un projet à fort impact avec une approche transdisciplinaire visant à cartographier les chaînes de valeur et d'approvisionnement en céréales, à identifier les chocs, à évaluer les risques et à mettre en place des interventions aux niveaux macro, méso et micro pour renforcer les bases de référence des chaînes d'approvisionnement en céréales, s'appuyer sur 4 LL engageant les acteurs du secteur céréalier pour accroître la résilience,

inclure les utilisateurs finaux dans le développement, la mise en oeuvre et la validation des solutions, valider au moins 2 céréales anciennes par pays et leur résilience au climat actuel, aux ravageurs et aux maladies, et utiliser ces dernières pour favoriser les environnements alimentaires locaux. SEEDS s'aligne sur l'objectif opérationnel 4 (agriculture intelligente et durable) et l'objectif opérationnel 8 (nouveaux modèles d'entreprise agroalimentaire) de PRIMA SRIA, ainsi que sur les priorités de recherche .

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Increasing agri-food supply chain (cereal) resilience in the MENA region

Budget

2.695.000 €

Durata

36 mesi

Paese ed Ente coordinatore

ITALIA
Politecnico di Milano

POLITECNICO MILANO 1863

Coordinatore scientifico:
CANIATO, Federico

Paesi partecipanti/ 4

Unità di ricerca/ 9

Sezione 1

Staples

STable food Access and Prices and Lower Exposure to Shocks

Contesto

The project aims at informing private and public resilience strategies through new evidence-based knowledge that is created, systematized and spread on external stressors and shocks deriving from cereal global value chains (GVCs) on the MENA region and on the feasible local solutions to address them, with a specific focus on Morocco and Egypt. The proposal answers the Section 1-Call, Topic 1.3.1-2023 (RIA) “Increasing agri-food supply chain (cereal) resilience in the

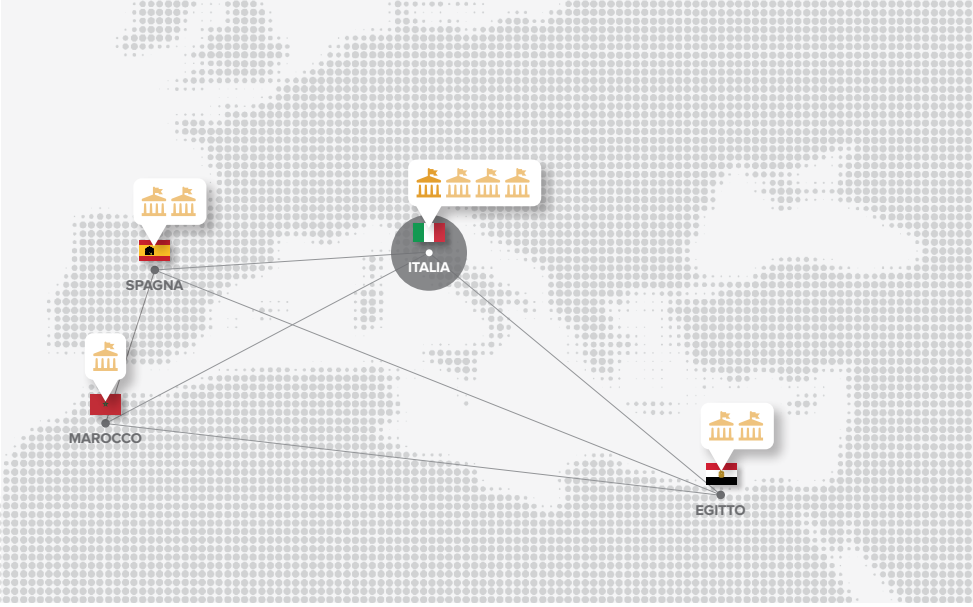
MENA region” and addresses the challenge by contributing to increase the resilience of Mediterranean and MENA food systems to the economic instability deriving from international food markets. Stability is a pillar of food security which does not only require food to be available, accessible and well utilized but also that these conditions are stable and predictable, stressing the centrality of information.

Stability is put at risk by several domestic and external factors and policymakers, supported by researchers and international organizations, have made big efforts to understand and track the main factors of risk for the domestic production of food. Instead, there is less understanding and systematized knowledge about which external shocks and stressors may derive from international markets, how they can be transmitted domestically to the actors and authorities along the cereal supply chains, and what solutions such actors have to react.

MENA countries are particularly exposed to international shock in cereals’ markets because they largely rely on import to feed their population and food self-sufficiency is not an option for them, due to water scarcity.

Obiettivi e contenuti

A deep understanding of such external shocks and stressors and of the coping strategies is fundamental for: a) private actors to promptly react and adjust their



Enti italiani partecipanti/ 3

Fondazione Collegio Carlo Alberto (CCA)

Università di Scienze Gastronomiche di Pollenzo (UNISG)

Soc. Coop. Agroalimentare e Agroindustriale del Bradano Spa

Altri Enti partecipanti/ 5

Economic Research Forum (ERF) - EG

Agricultural Cooperative for land reclamation Al Madina - EG

Euro-Mediterranean Economists Association (EMEA) - ES

Association of the Mediterranean Chambers of Commerce and Industry (ASCAME) - ES

Université Ibn Zohr (UIZ) - MR

plans accordingly; b) public actors to design resilience policies and strategies. Transparent information, collective learning and policy coordination in international cereal markets are

indeed essential to prevent unexpected shortages and to foster countries' food security. Available market information platforms, however, focus on single agricultural commodities disregarding the value chain, which ranges from agricultural inputs to cereal transformation, storage and distribution. Policymakers and economic actors need a better understanding of their own vulnerabilities to specific changes at each stage of the chain, as linkages in the GVCs represent powerful conductors of shocks and stressors across countries; moreover, they need a menu of solutions that they can implemented when shocks occur.

Risultati e impatti attesi

The project strategy answers these needs and it also makes the solutions available to policymakers and economic actors through digital technologies and decision support tools, in order to improve their preparedness and resilience. More formally, the specific objectives are:

1. To generate a better understanding, targeted on governments and economic actors involved in the cereal value chain in the MENA region, of the external stressors and shocks that derive from GVCs and threaten local cereal supply chain and food security.

2. To develop innovative solutions and evidence-based recommendations for strategies, action plans and best practices that governments and economic actors of the MENA food systems along the cereal value chain can use to enhance the resilience of the systems and ensure food security.

3. To improve preparedness of governments and economic actors along the cereal value chain and in the food systems to anticipate and cope with external stressors and shocks by integrating new knowledge and data from available platforms into a Decision Support System (DSS) to guide adoption of solutions, recommendations and practices identified by the project.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.490.153,50 €

Durata

36

Paese ed Ente coordinatore

ITALIA
Università di Salerno

UNIVERSITÀ DEGLI STUDI DI SALERNO

Coordinatore scientifico:
DONSI, Francesco

Paesi partecipanti/ 7

Unità di ricerca/ 15

Sezione 2

AgriBioPack

Valorizing Agrifood Residues for Bio-based Packaging Solutions

Contesto

The project, which falls on the spectrum from 'idea to application', will be carried out by an interdisciplinary team of universities for the research and innovation activities, with the direct participation of a company for the ICT solutions, and external support of food and packaging manufacturers, for a multi-actor approach towards the development of novel packaging solutions and new products of interest for the Mediterranean local communities, involved also through specific market analysis and business plans adapted to their needs.

Obiettivi e contenuti

The overall objective of AgriBioPack is to develop bio-based active packaging solutions (films, mats, and coatings) that can modulate the microbiome in Mediterranean products, hence contributing to improving their marketability by extending their shelf life and reducing food waste. More specifically, the bio-based packaging solutions will be derived from agrifood residues, both for the structural and functional components.

This ambitious objective will be pursued by AgriBioPack by (1) ranking in a sharable database the most promising Med agrifood residues (for supply chain, composition and functionality of the main components), (2) extracting valuable molecules and/or (3) microbiome from the residues through green technologies or fermentation processes, (4) optimizing the formulation of bio-based and biodegradable packaging (starting from PLA and pea proteins as basis), using the recovered extracts with reinforcing or antimicrobial properties, (5) evaluating the performance and safety of the developed packaging solutions in extending the shelf life of Med food products (meat, fish, fruit), (6) developing ICT solutions to reduce food waste through in-pack sensors and apps, and (7) assessing the environmental impact and the economic feasibility of the newly developed products.

Enti italiani partecipanti/ 3

University of Perugia (UNIPG)

Sant'Anna School of Advanced Studies (SSSA)

X Team Srl

Altri Enti partecipanti/ 11

University of Split (US) - HR

Lleida University (UdL) - ES

University of Granada (UGR) - ES

University of Technology of Compiègne (UTC) - FR

National School of Agriculture, Meknès (NSA) - MR

FMP-Rabat Université Mohammed V de Rabat (FMP) - MR

University of Ljubljana (UL) - SL

University of Maribor (UM) - SL

Istanbul Technical University (ITU) - TR

Ege University (EGE) - TR

Yeditepe Üniversitesi (YU) - TR

Risultati e impatti attesi

AgriBioPack will develop bio-based packaging solutions for Mediterranean foods, such as poultry meat, fish fillets and burgers, intermediate-moisture fruits, and fruit bars. By using sustainable materials from agrifood residues through mild processing technologies, it is expected to reduce the environmental impact of food packaging while maintaining high standards of food safety and quality. The project will promote the development of new environmentally-friendly techniques to reduce food waste. Several agrifood residues are investigated as starting materials to fully exploit the functionality of the different components. After the preliminary screening, the efficacy of the optimized bio-based materials for packaging will be demonstrated, with the expected output to improve food safety (SRIA, priority 3.2) and reduce food waste that meets market requirements.

The project awareness and dissemination activities are designed to showcase a new positive paradigm of innovation, in which traditional local and diversified products are valorized (priority 3.1), the activities of local food companies are promoted, and the health benefits of traditional ingredients are amplified. Consumers' awareness will have an impact on food, health, societal and cultural education and will renew the growth/competitiveness of the industries of healthy food products (priority 3.3). The project will influence policymakers, as need analysis, cutting-edge technologies, quality control approaches, and scientific findings of impact on public health will all be shared with regulatory agencies and public authorities.

Overall, the proposed approach can be considered as fully aligned with the Agro-Food Value Chain 2022 and the topic 2.3.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.512.775,70 €

Durata

36

Paese ed Ente coordinatore

ITALIA

Università di Napoli Federico II

Università degli Studi di Napoli Federico II

Coordinatore scientifico:
PISCITELLI, Alessandra

Paesi partecipanti/ 6

Unità di ricerca/ 9

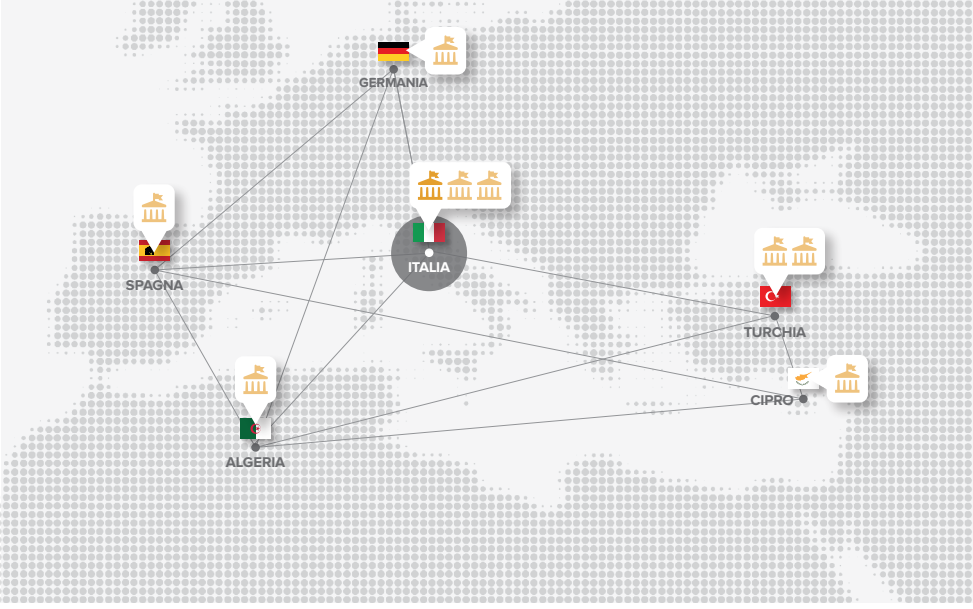
Sezione 2

Mate4Meat

Sustainable and antimicrobial MATErials for MEAT packaging

Contesto

MATE4MEAT consortium is composed by 9 partners, 4 universities, 1 research institution, and 4 private companies, from 6 different countries. The consortium takes advantage of the multidisciplinary competences proved at international level of all the partners. UNINA combines expertise in protein discovery, characterization, engineering and application; microbial production of polymers and added-value molecules. AEP is a manufacturing company that operates in the field of sustainable food packaging made of cellulose. FOSAN is a non-profit research organization that takes an interdisciplinary approach in the field of food science and nutrition. AU has experience in food waste treatment, novel technologies to be used in unit operations, food safety and sustainability. GTE has expertise in the circular economy, circularity analysis and the techno-economic analysis of various products especially plastics. UAMB has expertise in microbial biotechnology, applied microbiology, production, purification and characterization of secondary metabolites, enzymes, and antibacterial compounds. UJI has expertise in the formulation, processing, and characterization of novel biodegradable polymer systems with application in the food packaging sector. They are also experts in electrodynamic processing techniques to create coatings with release-control capacity. UJI has strong backup in the development of biodegradation and composting ad hoc studies including ecotoxicity in plants, worms and bacteria. IVV has long lasting experience in the development and comprehensive characterization of active packaging materials for food and non-food applications. CIP is a non-profit, educational and research organization. It constitutes one of the leading organizations in Cyprus in the fields of global education, social innovation, entrepreneurship, STEM and sustainable growth. CIP's team is also focusing on citizens engagement, communications, dissemination and exploitation of projects' results.



Enti italiani partecipanti/ 2

Alter Eco Pulp srl (AEP)

Fosan - Ente di Ricerca per lo Studio degli Alimenti e Nutrizione, (FOSAN)

Altri Enti partecipanti/ 6

Kecha Mouloud (UAMB) - AL

Fraunhofer Institute for Process Engineering and Packaging IVV (IVV) - DE

C.I.P. Citizens in Power (CIP) - CY

Universitat Jaume I (UJI) - ES

Ankara University (AU) - TR

GTE Carbon (GTE) - TR

Obiettivi e contenuti

Current requirements for food packaging are a high level of food quality and safety along the supply chain and the use of environmentally friendly packaging materials. The use of biodegradable active and sustainable packaging materials able to promote food preservation, while avoiding plastic waste accumulation, is becoming urgent. In the case of fresh meat, the packaging should preserve the food matrix, its chemical and physical quality, and reduce the presence of spoiling microorganisms. The main objective of the MATE4MEAT project is to build research and innovation capacities to prevent food spoilage prolonging its shelf-life and to develop safety and environmentally friendly alternatives to conventional plastic packaging materials, creating vacuum and non-vacuum meat packaging systems. In particular, the strategies put in play by MATE4MEAT will be the use of innovative and biobased antimicrobial agents effective against the microorganisms responsible for meat spoilage:

i) antimicrobial compounds by cold-adapted bacteria able to interfere with meat spoilage organisms' growth in chilled storage conditions,

ii) antimicrobial compounds produced by marine actinomycetes from extreme and less explored Algerian ecosystems,

iii) engineered adhesive antimicrobial proteins fused to antimicrobial peptides.

Risultati e impatti attesi

MATE4MEAT intends to valorise agro-food wastes/side streams by means of green approaches for their conversion into high-added value bioproducts: i) producing biobased microbial polyesters using wastes as a carbon source, ii) extracting phenols from selected wastes and using them to improve hydrophobicity and strength of materials, inferring them antimicrobial and antioxidant activity, iii) developing a cellulose-based material properly modified for meat packaging, with improved technological properties.

Finally the new concept for meat packaging will be validated in terms of effectiveness, safety, quality and the circularity performance indicators.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

2.019.816 €

Durata

36

Paese ed Ente coordinatore

ITALIA
Università di Pisa

Coordinatore scientifico:
COLTELLI, Maria-Beatrice

Paesi partecipanti/ 7

Unità di ricerca/ 10

Sezione 2

Plaminpack

PLAnt-based antiMIcrobial aNd circular PACKaging for plant products

Contesto

PLAMINPACK project will develop not only an anti-microbial packaging but also a model for Mediterranean farmers and food companies based on full circularity to accelerate the much-needed transition towards a green economy, thus contributing to the European Green Deal.

Obiettivi e contenuti

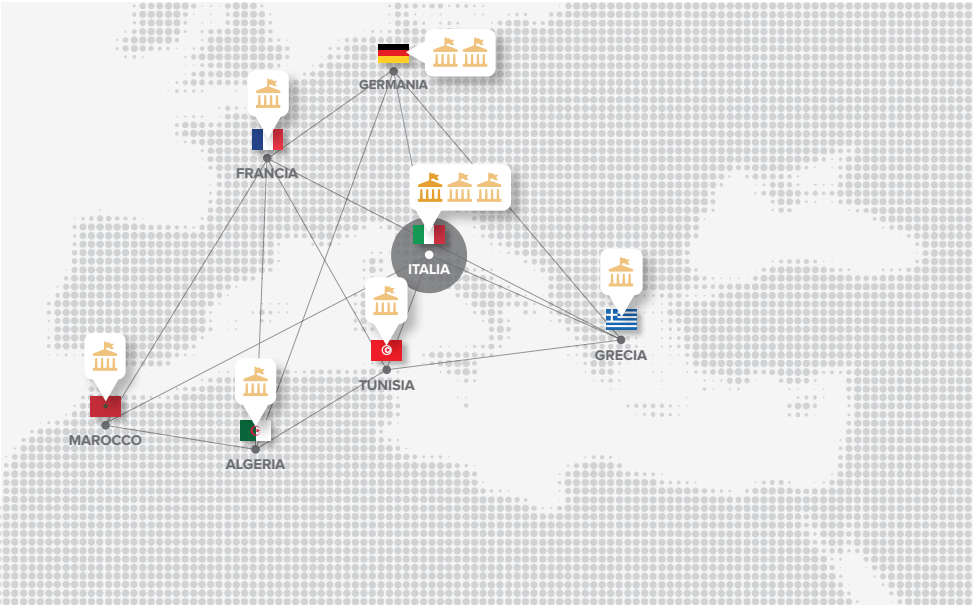
The objective of PLAMINPACK is the development of anti-microbial packaging materials suitable for producing, by conventional industrial methodologies like extrusion and spinning, nets, films and trays for perishable food based on biopolymers and molecules from plant origin.

Three representative perishable Mediterranean fruits were selected for testing the different packaging: tangerine for net, dates and strawberry for film and tray.

The anti-microbial and anti-oxidant molecules will be extracted from the three plants waste. Anti-microbial chitosan will be obtained by bioconversion of plants waste through biotechnology based on rearing Hermetia Illucens insects.

This last process will provide also proteins that will be used for producing gas barrier coatings for the packaging.

The packaging will be tested in terms of anti-microbial properties and shelf-life tests onto tangerine, strawberry and date. Plasma treatments (applied on fruits or packaging) and liquid treatments applied on fruits will be considered to improve the shelf-life avoiding the loss of food.



Enti italiani partecipanti/ 2

University of Basilicata (UNIBAS)

Next Technology (NTT)

Altri Enti partecipanti/ 7

University A.Ibn Badis Mostaganem (UMAB) - AL

Albstadt-Sigmaringen University, (ASU) - DE

Jun.-Prof. Dr. Christian Krupitzer, (UHOH) - DE

AgroParisTech (APTI) - FR

University of Ioannina (UOI) - HE

Université Cadi Ayyad (UCA) - MR

Université de Sfax (SFAX) - TN

Risultati e impatti attesi

With this aim two interesting potential tools will be developed: a database to connect plant waste with quality and amount of extracts; digital twin applied to fruit ripening and packaging, in view of developing a predictive machine learning instrument.

Life Cycle Assessment will be carried out for the new packaging.

The behaviour of the packaging in the end of life (organic and mechanical recycling), its stability and potential releases will be considered as well.

A training program and a dissemination based on the involvement of stakeholders will diffuse the interdisciplinary and multicultural knowledge.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.605.780 €

Durata

36

Paese ed Ente coordinatore

ITALIA
Università di Perugia

Coordinatore scientifico:
DE FRANCESCO, Giovanni

Paesi partecipanti/ 6

Unità di ricerca/ 9

Sezione 2

Safood4Med

Innovative and safe antimicrobial bioplastics for food preservation in the mediterranean area

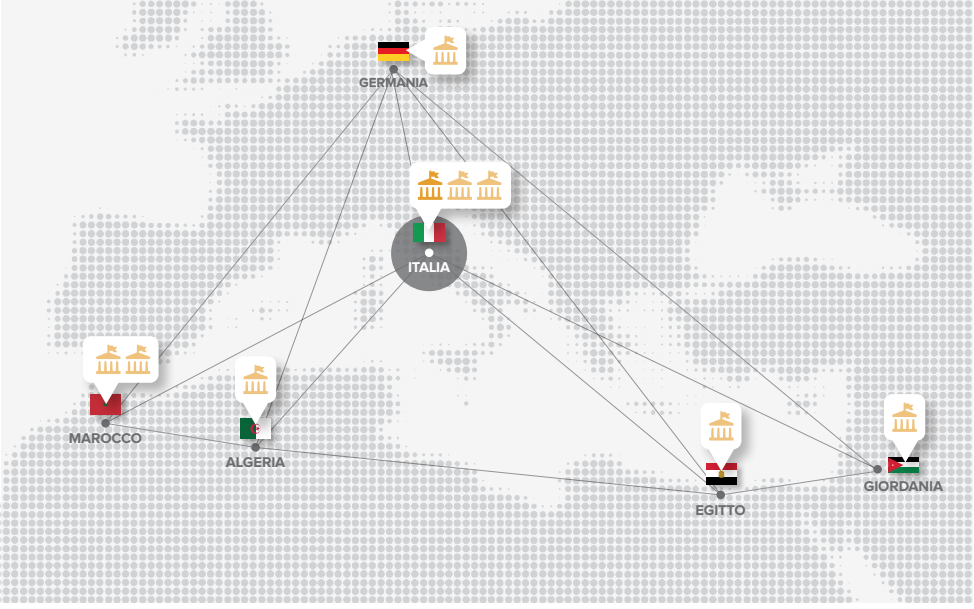
Contesto

SAFOOD4MED is in line with the call since it is dedicated to the development of the adoption of innovative biodegradable materials tailored to Mediterranean food systems, to prevent food spoilage with safer, more environmentally friendly alternatives to plastic packaging. This exploration is driven by our commitment to environmental responsibility, reducing food waste, ensuring consumer safety, and maintaining cost competitiveness. By addressing these critical aspects, we aim to contribute to a more sustainable and eco-friendly future for the Mediterranean food industry.

Therefore, SAFOOD4MED fits within the frame of the EU Plastics Strategy, the Waste Framework Directive and the Circular Economy Action Plan.

Obiettivi e contenuti

SAFOOD4MED is not just another research initiative; it's a groundbreaking mission poised to revolutionize the way we view food waste and packaging in the Mediterranean region. Our aim is clear: to create an affordable, ingenious biorefinery system that empowers smallholders through small-scale food waste transformation into biodegradable bioplastics. But we're not stopping there; we're going the extra mile. Imagine a digital ecosystem where food waste is no longer just discarded but becomes a valuable asset. We're aiming to craft a cutting-edge agri-food waste value-chain and supply chain, maximizing the potential of major food-waste components to create novel, high-value products for food packaging. The proposed bioplastics aren't ordinary plastics; they will be designed to be armed with remarkable antimicrobial properties, providing innovative solutions for food preservation. We're fully committed to the concept of the circularity within the food system, leveraging digital technologies to recover and add value to food losses and waste. In SAFOOD4MED the bioplastics will be reintegrated into



Enti italiani partecipanti/ 2

Universitas Mercatorum (UNIM)

University of Rome Sapienza (UNIROMA1)

Altri Enti partecipanti/ 6

University of Biskra (UMKB) - AL

Waziup e.V., (WAZIUP) - DE

Agricultural Research Centre (ARC) - EG

Al Balqa Applied University (BAU) - JR

University of Ibn Tofail (UIT) - MR

Technical Center of Plastics and Rubber (CTPC) - MR

the food production chain, benefiting specifically goat or ship fresh cheese and fresh tomatoes, but the approach can be extended to benefit a wide range of other Mediterranean foods, creating a ripple effect of sustainability and innovation across the region.

Risultati e impatti attesi

SAFOOD4MED will set up simple, eco-efficient, safe and automated technologies enabling the development of innovative food packaging formulations fulfilling the requirements of extended shelf-life of food while keeping it safe. The performance of the developed materials will be compared with those of reference traditional solutions, to ensure their superior competitiveness.

This will be pursued by a holistic approach, going from fractionation of food waste residue in high purity grade lignin, cellulose, and hemicellulose fractions to: automated procedures with low environmental impact; conversion of the fractions into food-grade bio-based polymers; bioplastics formulation/processing and digitally assisted monitoring of the quality of the antimicrobial packaging films.

To optimize the use of the feedstock, unconverted fractions will be recovered and reused to co-produce biogas, thereby setting the basis for a decentralized biorefinery model. The evaluation of whole value chain in terms of environmental sustainability and economic viability will be evaluated through robust life cycle assessment (LCA), social life cycle assessment, and techno-economic modeling tools.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.221.945 €

Durata

36

Paese ed Ente coordinatore

ITALIA

Università Niccolò Cusano

Coordinatore scientifico:
CACCIOTTI, Ilaria

Paesi partecipanti/ 6

Unità di ricerca/ 8

Sezione 2

Saphira

Sustainable Antimicrobial Packaging based on a Healthy Intelligent Renewable Approach

Contesto

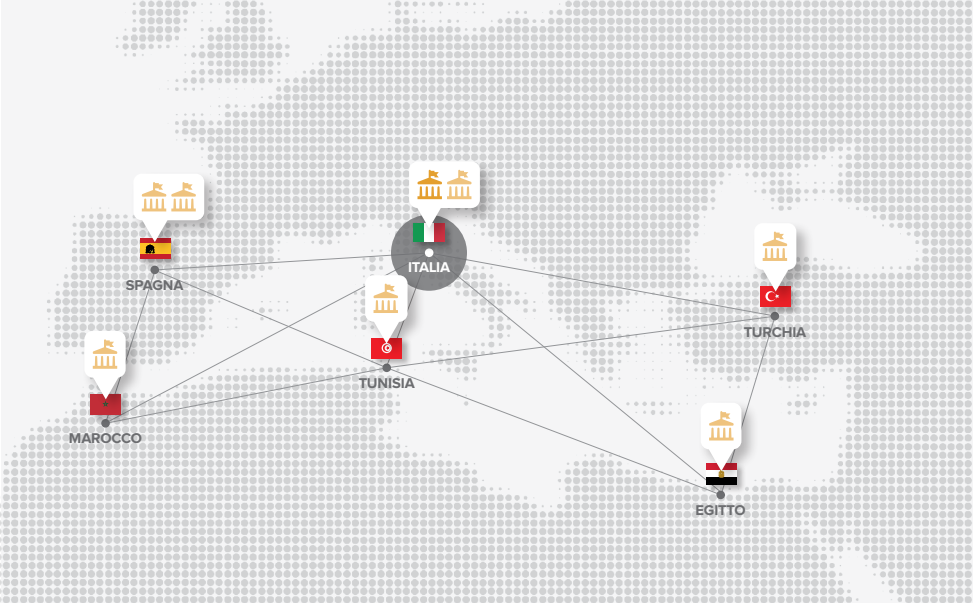
SAPHIRA proposes the development and implementation of innovative smart and antimicrobial packaging systems, and nano-edible coatings, based on agrifood waste derived materials. The SAPHIRA strategy will allow to reduce the food losses and wastes, not only by improving the shelf life and the durability of the packed food, but also by finding a new life for waste products.

Obiettivi e contenuti

TThe final aim is to reduce post-harvest losses of perishable Mediterranean commodities (mainly fresh fruits), preventing their degradation and extending shelf-life, through an integrated and multidisciplinary approach covering the entire value chain. SAPHIRA completely matches the aim and scope of the “PRIMA call Section 2-Topic 2.3.1 (RIA). SAPHIRA systems will be based on compostable polymers and agri-food waste derived extracts and fillers, to provide antimicrobial and antioxidant properties and mechanical reinforcement, respectively. In this manner, antimicrobial synthetic compounds will be replaced by natural agents while natural fillers will be used to provide a completely eco-sustainable approach.

Risultati e impatti attesi

The proposed approach simultaneously replies to two relevant social and health concerns, i.e. the urgent need for new efficient solutions for food packaging, in order to increase the food shelf life and safety, and the emergency for a sustainable waste management, in agreement with the “zero waste standard” and the Circular economy strategy. Moreover, microbiome-derived peptides will be employed in



Enti italiani partecipanti/ 1

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - Research Centre for Olive, Citrus and Tree Fruits (CREA OFA)

Altri Enti partecipanti/ 6

National Research Centre- Cellulose and paper Department (NRC) - EG

Universidad de Granada (UGR) - ES

Universidad de Alicante (UA) - ES

Cadi Ayyad University (CAU) - MR

Laboratoire de recherche en Informatique, Modélisation et Traitement de l'Information et de la Connaissance, Université de Tunis El Manar, Institut Supérieur d'Informatique (LIMTIC) - TN

MetaMeta Anatolia (MMA) - TR

order to provide antimicrobial features. Additionally, the safety and quality of packed food will be monitored, supplying the designed food packaging with innovative biosensors for the detection of pathogens, in order to further reduce the food losses and waste. A Life Cycle Assessment (LCA) analysis will be performed in order to estimate the potential environmental impact and the economic feasibility of the new systems with respect to the traditional counterparts.

Progetti con unità di ricerca italiane

I Progetti sono in ordine per area tematica (Water Management; Farming Systems; Agri-food Value Chain; Nexus). All'interno di ciascuna area tematica, sono illustrati prima i Progetti di Sezione 1 e poi quelli di Sezione 2.

Area tematica

Water Management

Azione e Topic

(IA) Integrated adaptive wastewater management plans in the Mediterranean region

Budget

4.270.000 €

Durata

36

Paese ed Ente coordinatore

GRECIA
Democritus University of Thrace

ΔΗΜΟΚΡΙΤΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΡΑΚΗΣ | DEMOCRITUS UNIVERSITY OF THRACE

Coordinatore scientifico:
NTOUGIAS, Spyridon

Paesi partecipanti/ 10

Unità di ricerca/ 13

Sezione 1

Cirqua

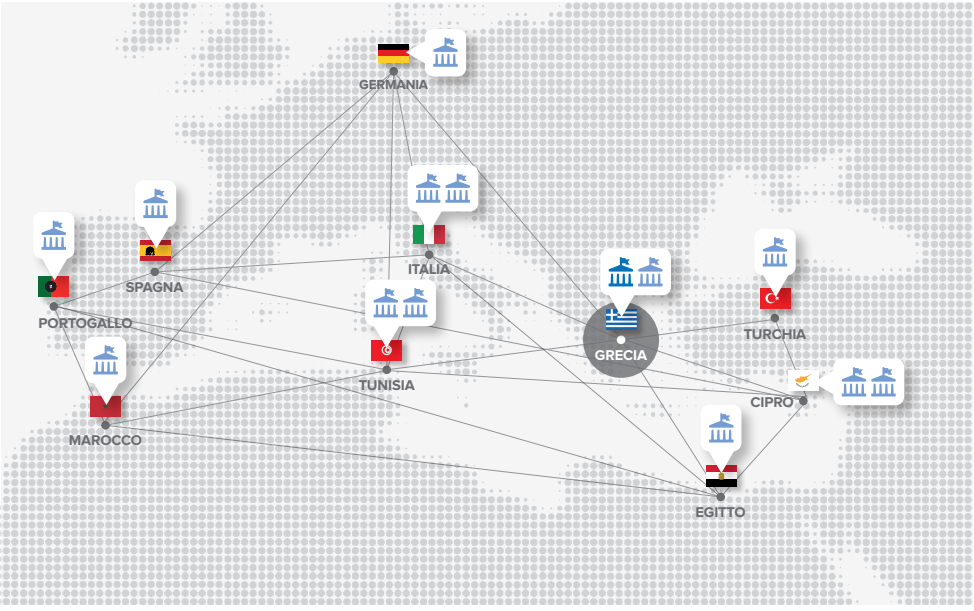
Integrated Approaches at Local Scale for Enhancing Water Reuse Efficiency and Sustainable Soil Fertilization from Wastewater's Recovered Nutrients

Contesto

Antimicrobial resistance (AMR) of bacteria is no longer exclusively a human health problem, but also a veterinary, agricultural, food safety, and environmental issue that requires comprehensive action in the spirit of a One Health approach. The misuse and improper disposal of antibiotics are major contributors to the worrying trend of AMR emergence worldwide, with wastewater and groundwater contamination being a factor that receives too little attention. There are numerous sources of antimicrobials in aquatic systems, including livestock farming, aquaculture as well as industrial and medical waste, with dangerous effects on flora, wildlife, and ecosystems. Bacteria are ubiquitous and abundant in the environment, and antibiotic pollution (even at low concentrations) affects the ecology of microbial communities and favors, among other processes, the acquisition and spread of AMR genes, which in turn increases the number of AMR bacteria that can potentially be transmitted to humans. In addition, the presence of antibiotic residues in drinking water could directly pose a risk to human health by affecting the gut microbiota. Active removal of antimicrobials and AMR bacteria from wastewater is therefore a necessity to enable safe reuse of water, particularly in a region where water is a scarce resource and where climate change is putting even more pressure on water quantity and quality.

Obiettivi e contenuti

In this study, we will monitor the microbiological quality of industrial and hospital wastewater in Alexandria and Borg El-Arab, as well as in Amman and Irbid as examples of rural and urban cities in Egypt and Jordan, respectively. We will analyze the types and concentrations of antibiotics as well as the AMR strains present in the wastewaters. Bioremediation and microbial competition will then be used to manage antimicrobial waste and fight AMR strains. We will also design



Enti italiani partecipanti/ 2

University of Basilicata

Monitoring and Management of Microbial Resources

Altri Enti partecipanti/ 10

University of Patras (UPAT) - GR

uDevelop e.V., uDev - DE

University Of Cyprus (UCY) - CY

Ain Shams University (ASU) - EG

Universidad Carlos III de Madrid - ES

University Abdelmalek Essaâdi-Tetouan (UAET) - MR

Interdisciplinary Center for Marine and Environmental Research (CIIM) - PT

University of Manouba (UMA) - TN

African Biotechnology Company (ABC) - TN

Instanbul University (IU) - TR

suitable pharmaceutical formulations to ensure safe, effective and sustainable delivery of the selected bioremediation enzymes and microbes. The project will serve as a pilot to be implemented in other sites of Egypt and Jordan. We will also use the findings to inform health and environmental authorities for the design of wastewater national treatment policies. The project has the benefit of allowing safe reuse of effluent water for agriculture and industrial purposes, partially solving the problem of water poverty in Egypt and Jordan.

Risultati e impatti attesi

Various physical and chemical methods can be used to remove antimicrobials from the environment, but the emergence of toxic residues by these approaches has shifted the focus on bioremediation as a more environmentally friendly and sustainable technique. Bioremediation uses different microorganisms such as bacteria, fungi, and microalgae, their enzymatic systems, as well as activated sediments to break down complex hazardous compounds. It reduces, detoxifies, mineralizes, and changes highly toxic chemicals into less toxic ones in an eco-friendly way without polluting the ecosystem. Bioremediation is an efficient and cheap technique for antibiotic degradation and therefore represents a safe and sustainable approach to manage antibiotics and AMR microbes present in wastewater.

Area tematica

Water Management

Azione e Topic

(IA) Integrated adaptive wastewater management plans in the Mediterranean region

Budget

3.630.284 €

Durata

36

Paese ed Ente coordinatore

SPAGNA
University of Girona

Universitat de Girona

Coordinatore scientifico:
COLPRIM GALCERAN, Jesus

Paesi partecipanti/ 7

Unità di ricerca/ 9

Sezione 1

Spore-Med

Sustainable upgraded wastewater treatment plants for resource recovery, water reuse and health surveillance in the Mediterranean region

Contesto

SPORE-MED aims to upgrade urban wastewater treatment plants by making them more efficient, more environmentally/economically/societally sustainable, and capable of providing eco-systems services within the water-energy-food-health nexus.

The project focuses on some of the main challenges facing the Mediterranean region, such as climate change, water scarcity and pollution, increasing population, or food security. To this end, SPORE-MED will scale-up a set of innovative physicochemical and biological water treatment technologies, ITC tools and protocols, at TRL6-8. The ultimate goals are to

i) optimize energy and nutrient management,

ii) increase wastewater reuse for irrigation,

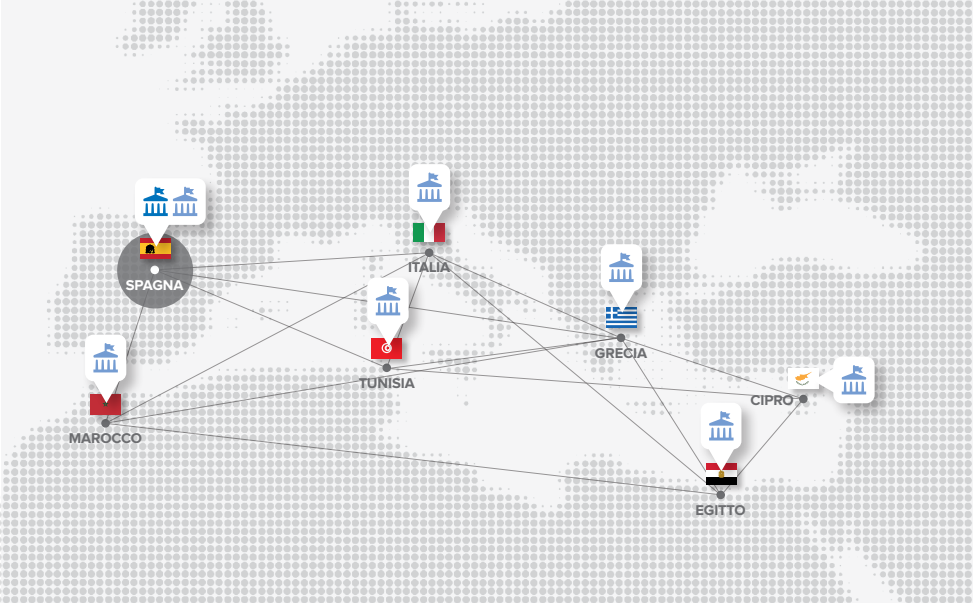
iii) steer digital transformation in the water sector,

iv) remove more micro-plastics and micro-pollutants v) and establish a wastewater-based health surveillance system for pathogens and antimicrobial resistance.

Obiettivi e contenuti

The work plan includes sampling, prototyping and validation-demonstration activities in urban wastewater treatment plants in Spain, Italy, Cyprus, Greece and Tunisia, which will demand the close collaboration between academic partners, large enterprises, water utilities and authorities in North and South Mediterranean basins.

Moreover, irrigation with wastewater and fertilization with recovered nutrients as struvite will be studied in field/greenhouse trials in Morocco, and the effects of these interventions will be assessed on soil microbiology. In parallel, the environmental, economic and societal sustainability of the proposed solutions systems will be determined by life cycle assessment, life cycle costing methodologies and social



Enti italiani partecipanti/ 1

University of Salerno (UNISA)

Altri Enti partecipanti/ 7

GS INIMA ENVIRONMENT - ES

Adasa sistemas - ES

University of Cyprus (UCY) - CY

Cairo University (CUN) - EG

Technical University of Crete (TUC) - GR

Choukrallah University of Mohammed IV (UM6P) - MR

Université de Sfax (USF) - TN

network analysis. Altogether, this will demand bringing together different scientific disciplines (chemical engineering, agrarian engineering, online measurement and monitoring, microbiology, social sciences, environmental assessment) from an integrated inter-disciplinary approach.

Risultati e impatti attesi

The upscale of SPORE-MED technologies and concepts has a high potential to create new market opportunities in the water, agricultural and healthcare sectors in the Mediterranean, while moving urban wastewater treatment plants towards energy and carbon neutrality and reducing nutrient and micro-plastics/pollutants in water bodies. At the societal level, SPORE-MED will advance the circular economy paradigm, promoting not only cutting-edge technologies but also public openness towards reuse solutions. This will have positive impacts on human health and wellbeing, by improving water quality, WBE monitoring of AMR and SARS-COV-2, and the sustainability and climate resilience of water treatment and agriculture.

Area tematica

Water Management

Azione e Topic

(RIA) New governance models to define best practices for sustainable water management and conflict mitigation

Budget

1.388.037 €

Durata

36

Paese ed Ente coordinatore

SPAGNA
Consejo Superior de Investigaciones Científicas

CSIC
Consejo Superior de Investigaciones Científicas

Coordinatore scientifico:
PUJADES, Estanislao

Paesi partecipanti/ 7

Unità di ricerca/ 7

Sezione 2

WATER4MED

Water management strategies and Adaptation acTions undER a global change context FOR the MEDiterranean region

Contesto

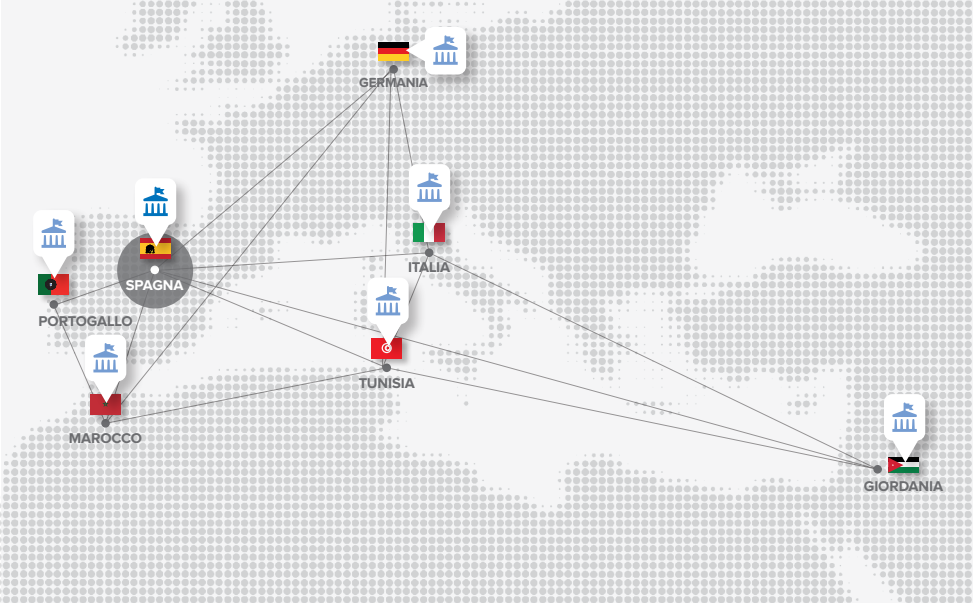
Pressure over water resources is increasing rapidly as a consequence of the climate change and growing population. As a result, water shortage is expected in the next future. In addition, the frequency, intensity and length of extreme climatic events will increase alternating drought periods with extreme precipitation that may cause flooding. In this context, it is needed to develop and incorporate robust and advanced approaches and tools into water governance models to allow defining better practices and designing efficient and sustainable water management strategies.

Obiettivi e contenuti

WATER4MED aims at (i) developing robust numerical tools by coupling hydrological and hydrogeological models for estimating realistically the evolution of water resources under the impact of climate change and growing demand, (ii) proposing new approaches for establishing the resilience capacity of water systems against meteorological events, (iii) applying advanced methods to assess the vulnerability and quality of water bodies, paying special attention to contaminants of emerging concern, (iv) assessing the suitability of flood-MAR to minimise floods and increase stored freshwater, and (v), incorporating data and approaches resulting from WATER4MED into integrative tools for water resources management.

Risultati e impatti attesi

WATER4MED will be developed in 4 demonstration sites (Spain, Tunisia, Portugal and Morocco) and the replicability of the developed approaches will be assessed



Enti italiani partecipanti/ 1

Politecnico di Bari (POLIBA)

Altri Enti partecipanti/ 5

Luis Samaniego (UFZ) - DE

Al-Balqa Applied University (BAU) - JR

University Ibn Zohr (UIZ) - MR

Universidade de Lisboa/Instituto Superior Tecnico (ULisboa/IST) - PT

Laboratoire de recherche Sciences et technologies des eaux (LRSTE) - TN

in two additional Mediterranean countries (Lebanon and Jordan), from which Lebanon is not represented in the consortium. Finally, it is worth to mention that WATER4MED will allow reducing future water-related conflicts by providing tools and data to improve governance models such as

(i) information about water availability,

(ii) methods based on monitoring and modelling to know the evolution of water resources under climate change, (iii) techniques for increasing stored water and minimising floods, and

(iv) preserve the quality and quantity of water resources.

Area tematica

Farming Systems

Azione e Topic

(IA) Actions to restore and return degraded lands in the Mediterranean region into productive agroecosystems

Budget

4.562.857 €

Durata

36

Paese ed Ente coordinatore

GRECIA
Ellinikos Georgikos Organismos - Dimitra

Coordinatore scientifico:
ASCHONITIS, Vassilis

Paesi partecipanti/ 8

Unità di ricerca/ 13

Sezione 1

Venus

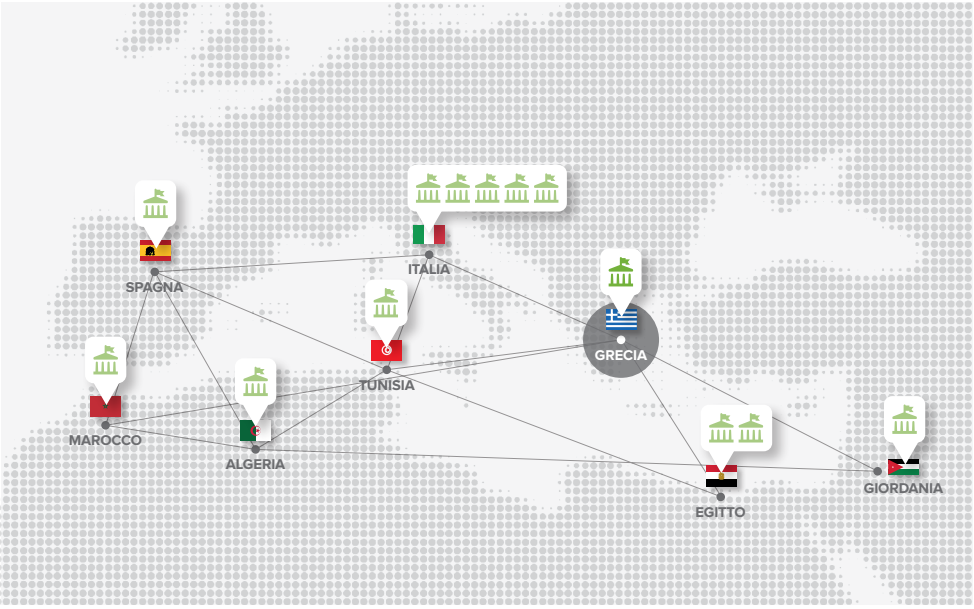
ConVErting marginal lands of the Mediterranean basin into productive and sustainable agro-ecosystems using low water demanding Neglected and Underutilized Species

Contesto

Desertification and freshwater availability have become the most limiting factors for agricultural production in the Mediterranean basin. Thus, there is an urgent need to introduce crop species that are more tolerant to water shortages able to grow in marginal lands subjected to desertification. These neglected and underutilized species (NUS) having adapted to arid climates, show greater resilience to adverse conditions compared to major crops and have the potential to induce a positive shift in the soil water balance and carbon storage. NUS could represent a valid alternative for farmers, in particular small holders to produce economic value converting marginal or low productivity soils to productive ones.

Obiettivi e contenuti

The overarching goal of VENUS is to demonstrate the environmental and economic potential of introducing low water demanding NUS adapted to grow in dry conditions, often in combination with other limiting factors like high salinity and reduced nutrient inputs. The five specific objectives of VENUS are: 1) Provide knowledge-based evidence of environmental and economic benefits of NUS cultivation in already existing demonstration sites; 2) Set up of 10 demonstration sites in different Mediterranean countries (Greece, Italy, Jordan, Morocco, Tunisia, Egypt) already affected and/or forecasted to be increasingly affected by land degradation; 3) Transfer additional knowledge on how to exploit NUS crops at best, assisting farmers in entering Living Labs and markets to promote their products and/or to explore new types of exploitation of their products; 4) Assess the environmental, social and economic scalability of the NUS cultivation at country scale; 5) Raise awareness among farmers, public authorities and food industries of the benefits derived by the introduction of NUS crops. VENUS will demonstrate the environmental potential (Goal 1) of introducing 10 NUS (Opuntia ficus indica;



Enti italiani partecipanti/ 5

University of Campania “Luigi Vanvitelli” (UNICAMPANIA)

Luca Rinci SRL

Caudarella

Consiglio Nazionale delle Ricerche (CNR)

Consorzio di Bonifica Adige Euganeo (CONSAE)

Altri Enti partecipanti/ 7

University Of Science And Technology Houari Boumediene (USTHB) - AL

Participatory Development Solutions - ElMahrousa PDS - EG

Alaa National Water Research Center (NWRC) - EG

IDENER scientific computing - ES

National Agricultural Research Center (NARC) - JR

Hassan II University of Casablanca - Faculty of Science and Technology - MR

Institut National de la Recherche en Génie Rural, Eaux et Forêts (INRGREF) - TN

Crithmum maritimum; Salicornia europea; Salsola Soda, Atriplex, Suaeda, Beta Maritima, Anchusa strigosa, Echium judaeum and Borago officinalis) for which the project partners have already developed a direct experience and knowledge in terms of agronomic performance and marketable opportunities. The market opportunities (Goal 2) will exploit the possibility for the local communities to utilize NUS for agricultural production, which can sustain internal demand and enhance economic growth. The scalability and transferability (Goal 3) will be reached by using suitability maps and a decision support system (DSS) taking into account current and future climate scenarios.

Risultati e impatti attesi

VENUS will disseminate and promote project results among farmers and their associations, processors, retailers, practitioners, researchers and policy makers showing the benefits derived from the NUS agricultural systems through the VE-NUS network platform. VENUS will provide ready to use tools (suitability maps, DSS, VE-NUS network platform) and a NUS Policy Initiative brief to governance authorities to better plan the management of their marginal lands and low productivity agro-ecosystems. Moreover, it will provide farmers with simple and inexpensive measures to increase their income. Finally, it will foster the introduction of incentives to small and sustainable agribusiness and will involve women and youth in the processing of the crops thanks to the strong link with the local culinary and medicine traditions of NUS crops.

Area tematica

Farming Systems

Azione e Topic

(RIA) A step toward carbon-neutral farms: coupling renewable energy sources with circular farming systems

Budget

1.492.345 €

Durata

36

Paese ed Ente coordinatore

MAROCCO
University of Cadi Ayyad

Coordinatore scientifico:
AZIZ, Faissal

Paesi partecipanti/ 8

Unità di ricerca/ 9

Sezione 2

CYCLOLIVE

From waste to resource: ReCYCLing OLIVE oil extraction byproducts for sustainable agricultural practices in the Mediterranean region

Contesto

CYCLOLIVE is a collaborative effort with 9 diverse partners from Italy, Germany, Morocco, Spain, Tunisia, France, Jordan, and Turkey. The project aims to tackle energy and environmental challenges linked to olive oil production biowastes in the Mediterranean region. These wastes are typically underutilized or managed inadequately, and CYCLOLIVE strives for a sustainable “zero waste” approach,.

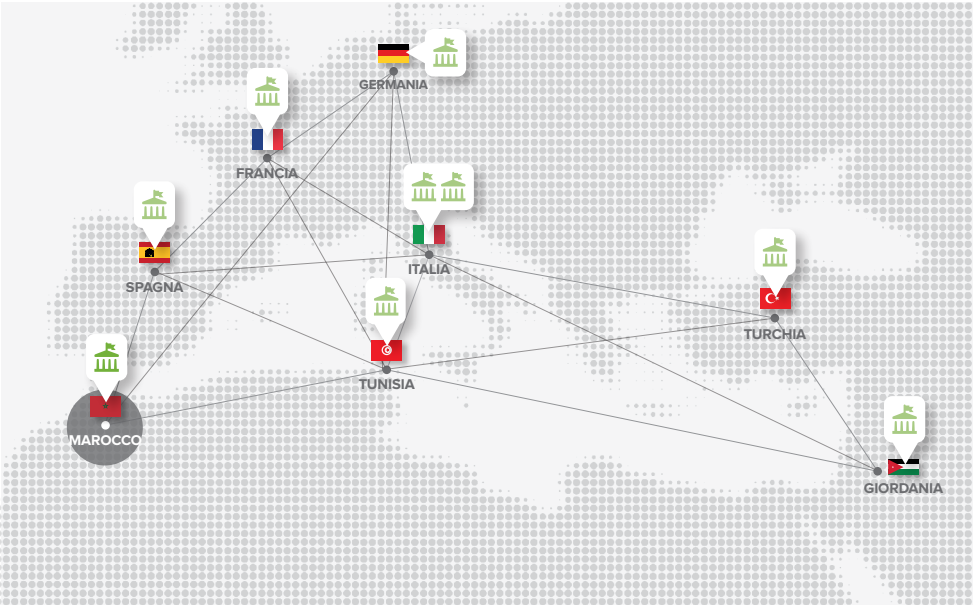
Obiettivi e contenuti

The project is focusing on the following key objectives:

Environmental Monitoring: Objective 1 (OB1) assesses river basin quality near olive milling sites in Italy, Morocco, and Tunisia, measuring the impact of olive mill wastewater (OMWW). The project will then establish three mesocosms, which will serve as experimental platforms to simulate the impact of OMWW discharge under controlled conditions.

Energy and Sustainability: CYCLOLIVE will execute three OMWW treatment demonstration cases with enhanced CWs integrated with biochar and solar aeration power (OB2). Additionally, it will carry out three demonstration cases in Italy, Morocco, and Tunisia for converting OMSW into biochar for water treatment, using either solar-based or conventional energy systems (OB3). Two more demonstration cases in Morocco and Italy will focus on transforming OMSW into biochar for use as a slow-release bio-based fertilizer in both field and soilless agriculture (OB4). Furthermore, a demonstration case in Turkey will convert the same OMSW into water-absorbent biopolymers (WABs) for field and soilless agriculture (OB5).

Waste-to-Value – To implement three demonstration cases in Italy, Morocco, and Tunisia for the OMWW reuse and/or biochar/WAB application for the field or soilless production of edible crops important in the Mediterranean context using modern and tailored decision support tools (OB6). Sensible soil bioindicators will be used



Enti italiani partecipanti/ 2

University of Florence (UNIFI)

University of Turin (UNITO)

Altri Enti partecipanti/ 6

Forschungsverbund Berlin e.V (FVB-IGB) - DE

Spanish National Research Council (CSIC) - ES

Université de Lorraine (UL) - FR

University of Jordan (UJ) - JR

University of Sfax (USF) - TN

MetaMeta Anatolia (MMA) - TR

to study soil effects due to the introduction of CYCLOLIVE products in agriculture.

Life Cycle Assessment (LCA): Objective seven (OB7) evaluates the life cycle of materials produced within the CYCLOLIVE project using the LCA approach. This assessment will provide insights into the environmental sustainability of the project's innovations.

Health and Quality Assessment: CYCLOLIVE will conduct comprehensive monitoring of inorganic and organic micropollutants across the agricultural chain to evaluate potential risks to human health related to food consumption (OB8 and OB9). The project will also assess food quality, including essential primary and secondary metabolites like sugars, polyphenols, and glucosinolates.

Stakeholder Engagement: The tenth objective (OB10) emphasizes active engagement with local industrial and commercial stakeholders and end-users from the project's early stages. A participatory approach will ensure that the innovations meet practical needs and are readily adopted.

Policy Advocacy: The eleventh and final objective (OB11) focuses on collaborating closely with policymakers. The project will share its results and outputs to advocate for adopting best management practices related to ecosystem resources and waste management.

Risultati e impatti attesi

The project studies real and reconstructed ecosystems. Reconstructed ecosystems are tested with OMWW/OMSW to simulate uncontrolled discharge, assessing various biological and chemical parameters, including emerging and priority micropollutants. OMSW is used to produce biochar for water treatment and eco-friendly polymerization techniques create biochar and WABs for agriculture. These are tested at three sites for soilless crop production, growing olives, rockets, strawberries, tomatoes, maize, and peppers with modern irrigation. LCA assesses environmental impact. Food safety monitoring covers various contaminants in the agricultural production chain, and food quality assessment focuses on primary and secondary metabolites. The project also addresses social aspects like consumer acceptance and farmer concerns about unconventional water sources for irrigation.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.784.972 €

Durata

36

Paese ed Ente coordinatore

SPAGNA

Universidad de Córdoba

UNIVERSIDAD D CORDOBA

Coordinatore scientifico:
ESPINOSA VICTOR, Eduardo

Paesi partecipanti/ 7

Unità di ricerca/ 9

Sezione 2

BIOMEDPACK

Shelf-life Enhancing Packaging Systems for Mediterranean Food through Innovative and Circular Solutions Based on Agri-Food Multi-Product Cascade Biorefinery

Contesto

BIOMEDPACK aims to address the pressing problem of food waste and sustainability by developing scalable and sustainable packaging systems based on the valorisation of lignocellulosic and bioactive fractions of agricultural by-products. This proposal will contribute to the development of a socio-economic strategy for the potential implementation of small-scale biorefineries in Mediterranean region to move towards a sustainable economy. The fractions isolated from the valorised by-products will be used in the development of bio-based packaging systems as viable and cost-effective alternatives to current plastic-based systems.

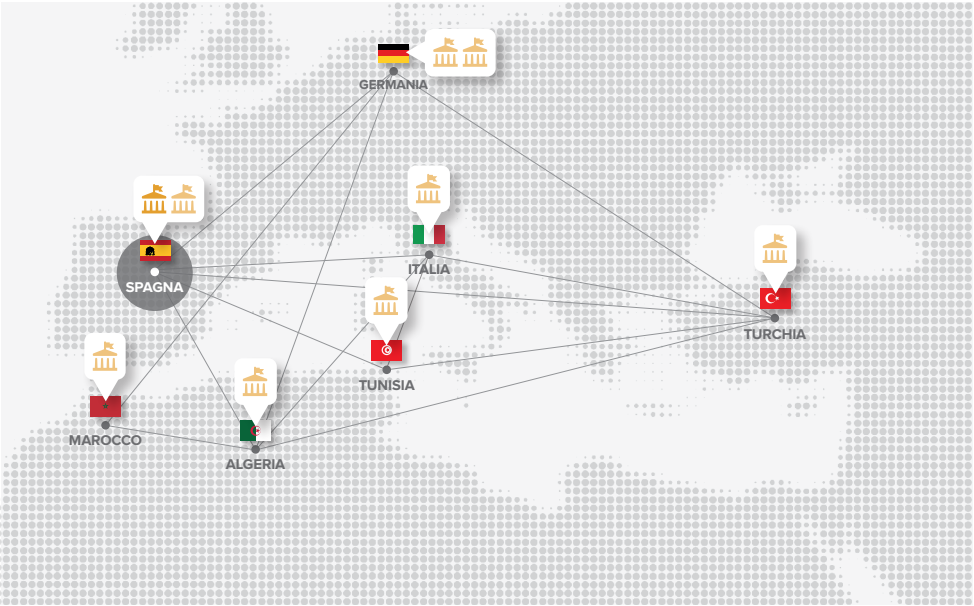
Obiettivi e contenuti

Theses packaging systems will be based on the food-microbiome-interaction approach. To this end, design of packaging formulations will be based on a thorough understanding of the dynamic microbiome of foods during the various stages of their postharvest management. This knowledge will be used to investigate the effect of natural antimicrobial agents on the microbial communities of food products, enabling the development of packaging solutions that modulate the dynamics of the microbiome to increase the shelf-life of Mediterranean foods.

Risultati e impatti attesi

To facilitate the development of these solutions, an open in silico/in vitro platform will be created to pre-screen natural active agents and evaluate their impact on microbial consortia considering the entire microbial community.

Pioneering new packaging concepts will be explored, such as symbiotic packaging,



Enti italiani partecipanti/ 1

Università di Torino

Altri Enti partecipanti/ 7

PackBenefit S.L. - ES

Université Frères Mentouri Constantine 1 - AL

University of Freiburg - DE

Computomics GmbH (CTX) - DE

Mohammed VI Polytechnic University - MR

University of Sfax - TN

GTE Sustainability and Energy Consultancy (GTE) - TR

where edible coatings are used to support functional bioprotective microbial consortia and biocompounds to enhance the nutritional properties of vegetables.

A complete portfolio of 100% bio-based active packaging demonstrators (fibre trays, films, coatings, absorbent pads and halochromic indicators) will be developed and tested along of postharvest chain. These systems can be synergistically combined to enhance their effectiveness and meet the specific needs of foods.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.334.945 €

Durata

36

Paese ed Ente coordinatore

SPAGNA

Universidad de Córdoba

UNIVERSIDAD D CORDOBA

Coordinatore scientifico:
GARCIA, Araceli

Paesi partecipanti/ 7

Unità di ricerca/ 8

Sezione 2

DurInnPack

Innovative Packaging and edible coatings to guarantee post-harvest Durability of Mediterranean fruits and vegetables production

Contesto

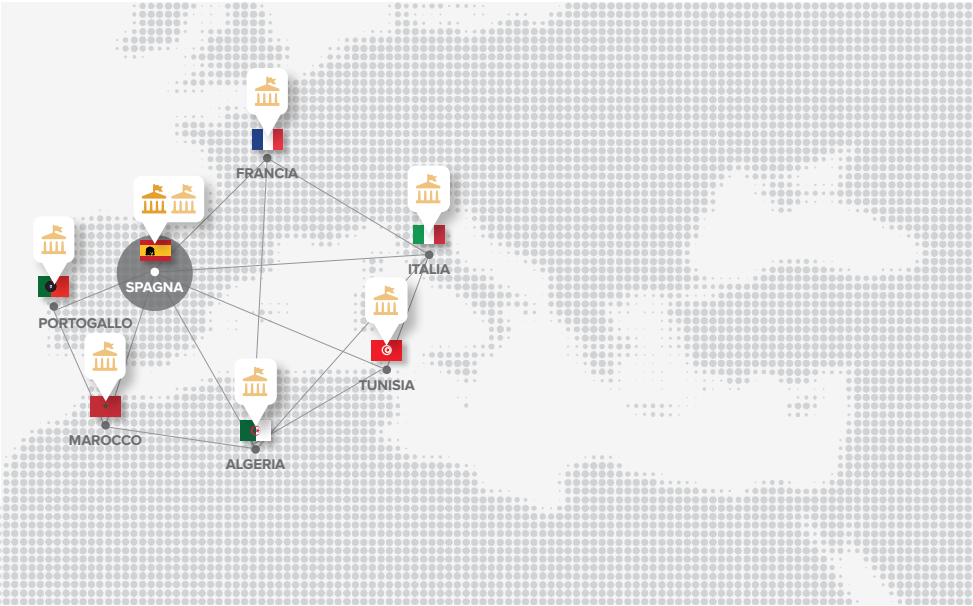
The valorisation of vegetal, dairy and crustacean residues is proposed through their transformation into polymeric matrices and fillers/reinforcements. Essential oils with biocidal and/or repellent activities will be used as antimicrobial agents, but also strains of probiotic lactic acid bacteria will be tested as a novel antimicrobial solution. The chemical functionalization (catalysed mechanochemistry technology) and the development of Pickering emulsions will allow obtaining novel mixtures in the form of edible coatings with antimicrobial properties and greater mechanical and environmental resistance during storage and transport of the impregnated vegetables (tomato, pepper).

Obiettivi e contenuti

A new methodology will be tested based on the development of sprays that could be used throughout the entire food chain (producer, supplier, seller, consumer). Likewise, as an innovative solution, the early application of these coatings on vegetables during their cultivation will be tested, since the flexibility of the biopolymers used should allow their growth and maturation in situ.

Risultati e impatti attesi

In this way, the solution proposed by DurInnPack would not only avoid post-harvest food waste but would also improve crop yields by protecting them against biotic (insects or rottenness) and abiotic (extreme temperatures, solar radiation) agents. Analysis of the cumulative energy demand (CED) during the food chain will provide useful information for the estimation of the global environmental



Enti italiani partecipanti/ 1

Università di Milano

Altri Enti partecipanti/ 6

Consejo Superior de Investigaciones Científicas - Estación Experimental del Zaidín (CSIC-EEZ) - ES

Centre de Recherche Technique et Scientifique en Analyses Physico-chimiques (CRAPC) - AL

Grenoble-INP-University of Grenoble Alpes (LGP2 INP Grenoble) - FR

Université Mohammed Premier Oujda (UMP) - MR

Instituto Politécnico de Bragança (IPB) - PT

Institute of Technological Studies of Ksar Hellal (ISETKH) - TN

impact (carried out also by means of the LCA approach) depending on the food packaging used. All the results obtained along the project will be strategically and properly disseminated to the public of the scientific, social and business fields. This, together with various demonstration activities for local producers and small suppliers, and an impetus to encourage the creation of start-ups and technology-based companies mainly by female staff, will give a vision of transferability and global mentoring to the project.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.594.588,38 €

Durata

36

Paese ed Ente coordinatore

TUNISIA
Center of Biotechnology of Borj Cédria

Coordinatore scientifico:
TRABELSI, Najla

Paesi partecipanti/ 10

Unità di ricerca/ 17

Sezione 2

FoWRSaP

Agro Food Waste Recovery: new processing technologies for food Safety and Packaging

Contesto

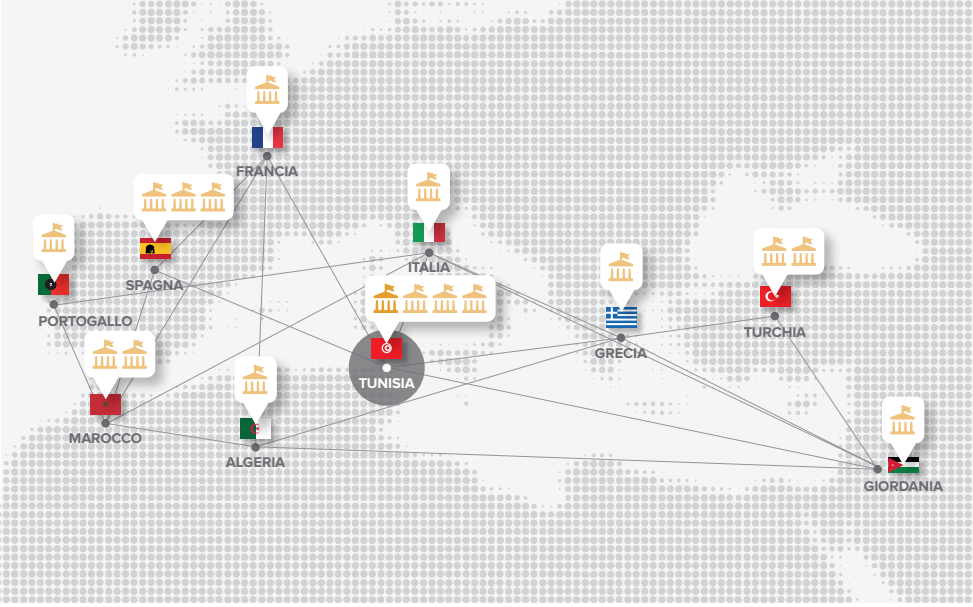
FoWRSaP project represents a pioneering initiative at the intersection of sustainability, food technology, and waste management. Situated in the Mediterranean region, where food quality and shelf-life face continuous threats, FoWRSaP seeks to revolutionize the agro-food industry through a multifaceted approach. FoWRSaP addresses the challenges posed by microbial spoilage, quality degradation, and waste generation by leveraging innovative biodegradable packaging materials, fabricated from biopolymers (Chitosan and Polylactic acid) and enriched with bioactive compounds derived from olive and date by-products and plant microbiome. These materials are not only environmentally friendly but also enhance food preservation, quality, and safety.

Obiettivi e contenuti

The project employs cutting-edge green extraction techniques to obtain valuable bioactive compounds, such as antioxidant and antimicrobial agents, organoleptic quality enhancers, and natural pigments, from agro-food waste.

These compounds, with their interesting properties, hold the key to extending the shelf life of food products naturally. Furthermore, FoWRSaP integrates biosensor-based packaging and nano-sensor technologies, enabling real-time monitoring of food products during transportation and storage.

This technology empowers consumers to make informed choices about product quality. FoWRSaP's commitment to circular economy principles is evident in its valorization of by-products from various agro-food industries, contributing to environmental and economic sustainability.



Enti italiani partecipanti/ 1

Università di Pisa

Altri Enti partecipanti/ 15

National Center for Nuclear Sciences and Technologies (CNSTN) - TN

VACPA - TN

AGRI-LAND - TN

University of Bejaia (UB) - AL

Centro Tecnológico de la Carne (CTC) - ES

Miguel Hernández University (UMH) - ES

Surinver El Grupo S. Coop - ES

Centre Technique Industriel de la Plasturgie et des Composites (IPC) - FR

Aristotle University of Thessaloniki (AUTH) - GR

The Hashemite University (HU) - JR

University Hassan II of Casablanca (UH2C) - MR

Faculte des Sciences Universite Mohammed Premier Oujda Maroc (UMP-Oujda) - MR

Instituto Politécnico de Bragança (IPB) - PT Portugal

Tarsus University (TU) - TR

Middle East Technical University (METU) - TR

Risultati e impatti attesi

Through collaborative efforts with diverse stakeholders, including SMEs, research institutions, and local communities, FoWRSaP aims to create a holistic ecosystem that fosters knowledge exchange, innovation, and economic development.

In summary, FoWRSaP project envisions a future where agro-food waste is transformed into valuable resources, and food products reach consumers with extended shelf life, improved quality, and enhanced safety. This multifaceted approach holds the potential to revolutionize the agro-food industry while promoting sustainability and environmental stewardship.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.628.795,40 €

Durata

36

Paese ed Ente coordinatore

FRANCIA
Ingénierie des Agropolymères et Technologies Emergentes

Coordinatore scientifico:
GUILLARD, Valérie

Paesi partecipanti/ 9

Unità di ricerca/ 11

Sezione 2

INTACTBioPack

INTelligent, ACTive MicroBIOme-based, biodegradable PACKaging for Mediterranean food

Contesto

INTACTBioPack is a 36-month time-frame project involving a pan-Mediterranean consortium of 11 partners that aims to foster the adoption by the Mediterranean region, of novel, cost-competitive, biodegradable, and reusable food packaging, able to reduce food waste and loss.

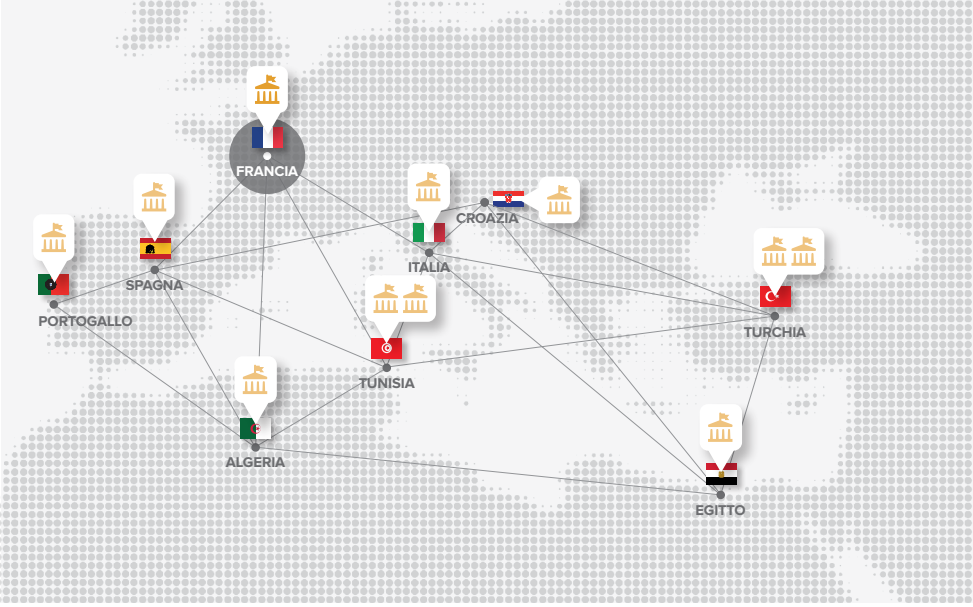
Obiettivi e contenuti

This project has three main objectives:

1. Developing innovative home-compostable food-packaging materials, covering the dual functions of protective barrier and active food ingredient, as well as a reusable sensor (vegetal layer coupled with low-cost RFID) and colorimetric sensor to monitor food freshness during storage at home.
2. Exploring the potentialities of bio- and microbiome-based solutions to design consumer “self-packing” solutions to preserve and upcycle at-home leftovers or unconsumed but still edible raw fresh produce.
3. Enabling a general strategy for designing safe, sustainable, and efficient biodegradable, active packaging solutions by the deployment of generalised methodologies, mathematical tools, business plans and guidelines.

Risultati e impatti attesi

Stemming from consortium’s complementarity and cross sector expertise, the philosophy of INTACTBioPack is to develop a replicable, holistic approach to design safe and working, smart and active packaging solutions, that enhance food quality & shelf-life, inform on food freshness and even transform the product (e.g.,



Enti italiani partecipanti/ 1

Consiglio nazionale delle ricerche – istituto di scienze delle produzioni alimentari (CNR-ISPA)

Altri Enti partecipanti/ 9

Université Mouloud Mammeri de Tizi-ouzou (UMMTO) - AL

University of Zagreb, Faculty of Food Technology and Biotechnology (UNIZG-PBF) - CR

Nile University (NU) - EG

Institute of Agrochemistry and Food Technology. Spanish National Research Council (IATA-CSIC) - ES

New University of Lisbon, Institute of Chemical and Biological Technology (ITQB NOVA) - PT

Centre Technique de l'Emballage et du Conditionnement, PackTec - TN

Institut National Agronomique de Tunisie (INAT) - TN

Tarsus University (TU) - TR

Yörüksüt A.S. - TR

fermentation process) to decrease food waste and loss especially at home. By broadening the range of bioactive substances to microbiotes and focusing on abundant bio-based resources (e.g., cellulose, agricultural residues), upcycled with high added value constituents (e.g., probiotics, essential oils), INTACTBioPack is fully contributing to scope and impacts of Thematic Area 3, “Sustainable Mediterranean food value chain for regional and local development” of PRIMA 2023 Work Plan and, more specifically, topic 2.3.1 of section 2. The materials developed will be demonstrated on a selection of relevant food case studies for the Mediterranean region (e.g., bread, dairy, fruits and vegetable, seafoods).

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.734.637,34 €

Durata

36

Paese ed Ente coordinatore

PORTOGALLO
University of Madeira

UNIVERSIDADE da MADEIRA

Coordinatore scientifico:
GUILLARD, Valérie

Paesi partecipanti/ 9

Unità di ricerca/ 16

Sezione 2

PASPACK 4.0

Producing Alternative Sustainable food bio-based PACKaging from Mediterranean agri-food by-products and waste

Contesto

The project is subdivided into seven work packages with well-defined goals and tasks, which falls perfectly under the multi-actor approach given the strong and diverse set of stakeholders (17 partners from 9 Mediterranean countries) involved in this project.

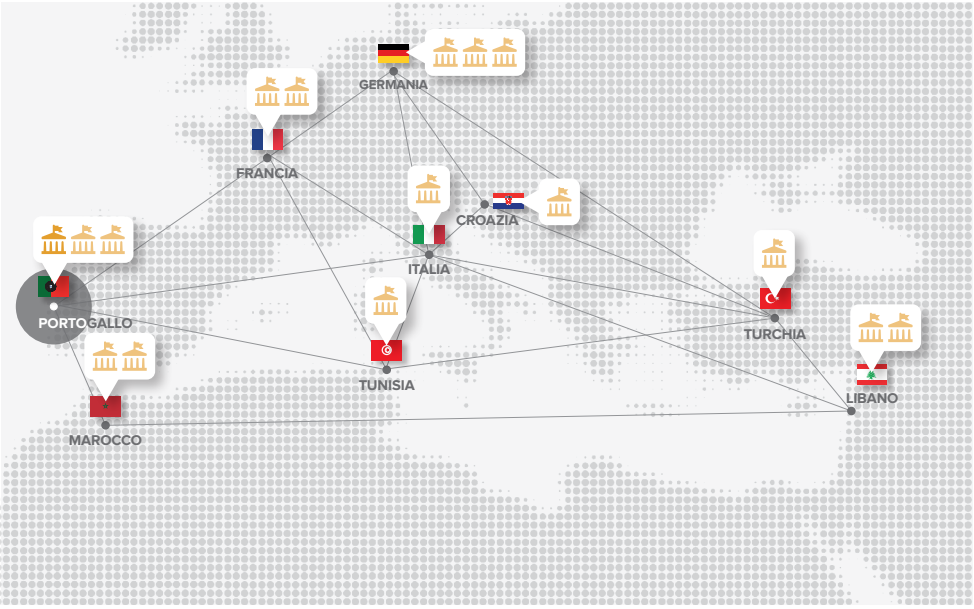
Obiettivi e contenuti

PASPACK 4.0 aims to produce an innovative and sustainable bio-based food packaging from Mediterranean agri-food by-products and waste, especially pomegranate (peel and seeds) and dates (date pits, molasses), to contribute to addressing the dilemma of food waste and the overuse of plastic in food packaging.

This will be achieved by harnessing innovative technologies, mainly those of fourth industrial revolution (I4.0) innovations, such as smart sensors, nanotechnology, artificial intelligence, blockchain, 3D printing, and radio-frequency identification (RFID), to develop a sustainable alternative smart food packaging with the following features: to be able to reduce food waste and plastic food packaging material; to be active to maintain food quality and improve shelf-life; to be sustainable and cost-effective, obtained from agri-food by-products and waste, using emerging green extraction and processing technologies; to be flexible and suitable for application to different food categories; and to be intelligent to monitor food quality and safety and tell the consumer about freshness of the packaged food.

Risultati e impatti attesi

Our innovative approach will be based on polysaccharide-cellulose nanocrystals



Enti italiani partecipanti/ 1

Università di Napoli Federico II

Altri Enti partecipanti/ 9

Centro de Apoio Tecnológico Agro-Alimentar (CATAA) - PT

Logoplaste - PT

Center fo Innovative Processes Engineering (CENTIV) - DE

Leibniz University Hannover (LUH) - DE

Traceless - DE

University of Zagreb (UNIZG - CR

Sustainable AgriFoodtech Innovation & Research (SAFIR) - FR

Institut national d'enseignement supérieur et de recherche en alimentation, santé animale, sciences agronomiques et de l'environnement (Unité Mixte de Recherche sur le Fromage), VetAgro Sup (UMRF) - FR

University of Balamand (UOB) - LB

Lebanese University (LU) - LB

Université Mohammed V de Rabat (UMV-R) - MR

Centre Technique de Plasturgie et de Caoutchouc (CTPC)- MR

National Institute of Research and Physicochemical Analysis (INRAP) - TN

Cukurove University (CUNI) - TR

matrix, designed from date and pomegranate by-products and waste, enriched by bioactive compounds to enhance the antimicrobial and antioxidant capacity of the developed packaging film. An anthocyanin-based pH-sensitive indicator will be developed and RFID tags will be implemented to monitor food freshness.

Moreover, blockchain applications will be used to provide relevant information about the traceability of food along the supply chain, constituting the originality and novelty of the proposed packaging solution. The smart packaging will be tailored and adopted to improve the shelf-life of highly perishable products, such as fish, meat, and cheese.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

2.084.032 €

Durata

36

Paese ed Ente coordinatore

GERMANIA
University of Hohenheim

UNIVERSITÄT HOHENHEIM

Coordinatore scientifico:
SCHMOECKEL, Sandra

Paesi partecipanti/ 9

Unità di ricerca/ 13

Sezione 2

QuiPack

Food value chain intelligence and integrative design for the development and implementation of innovative food packaging according to bioeconomic sustainability criteria

Contesto

The current food value chains in Europe and the Maghreb Region face significant challenges with regard to sustainability, food loss, waste, and safety issues. To address these problems, the QuiPack project consortium will implement a Life Cycle Design Approach to develop novel functional food packaging solutions with nature-based antimicrobial and smart sensor properties.

Obiettivi e contenuti

QuiPack's innovative solutions will

(1) valorise waste and side streams along the quinoa-, other agricultural, and aquaculture food supply chain;

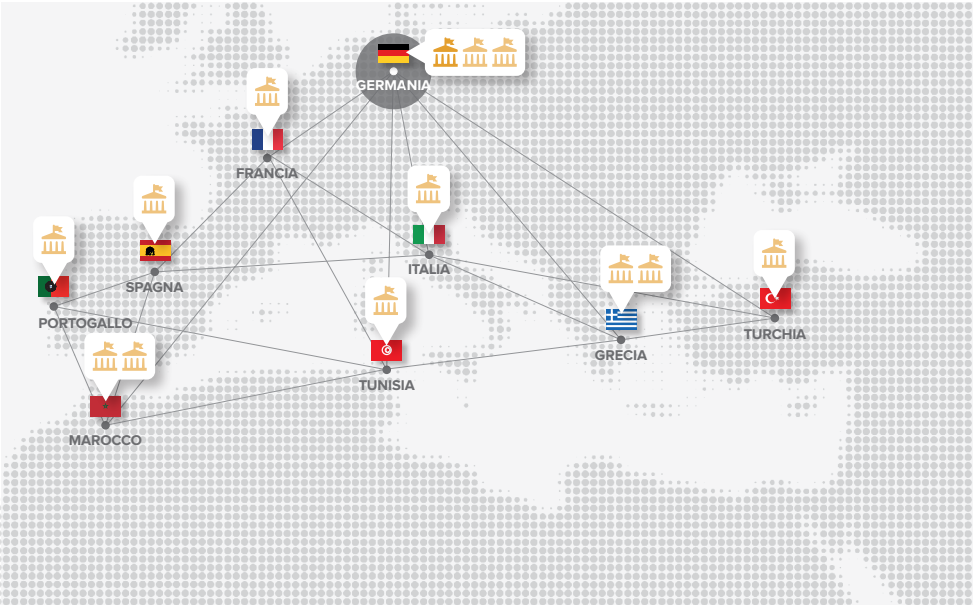
(2) develop and test biointelligent coatings and packaging materials that meet customers' and market expectations and requirements both in Europe and the Maghreb region,

(3) be smart (i.e., linked to AI/IoT-assisted Food Value Chain Intelligence and Decision Support Systems – FVCI/DSS) and optimized with regard to food safety, traceability, environmental effects, sustainability, as well as cost-effectiveness in Mediterranean settings,

(4) include socioeconomic studies on consumers preferences, needs and acceptance, and

(5) be accompanied by tailored communication, training, and dissemination to support the wide take up of novel solutions.

The QuiPack consortium and its associated partners are determined and will mobilize all necessary resources to become pioneers and pacemakers for innovation and technological advancements of biodegradable antimicrobial materials in the Mediterranean region. By overcoming today's scientific-technological barriers, the



Enti italiani partecipanti/ 1

Ca' Foscari Università di Venezia

Altri Enti partecipanti/ 11

Fibers365 GmbH (F365) - DE

Institut für Naturstoffverarbeitung INV - HdM Forschungscampus Lenningen, HdM - DE

University of Vic-Central University of Catalonia (UVic) - ES

Ecole Nationale Vétérinaire, Agroalimentaire et de l'Alimentation Nantes Atlantique, Oniris - FR

University of Thessaly (UTH) - GR

AgriTrack SA (AT) - GR

Moroccan Foundation for Advanced Science, Innovation and Research (MASciR) - MR

Université Mohammed Premier Oujda (UMP) - MR

Universidade de Aveiro (UAveiro) - PT

Centre of Biotechnology of Borj Cedria (CBBC) - TN

Atatürk Üniversitesi, Fisheries Faculty (AU) - TR

consortium will advance functionalized packaging solutions and corresponding processing technology from TRL 2/3 - 6/7, dependent on the technology and business partners involved. We focus on natural antimicrobial and smart coatings, foil, as well as cardboard packaging solutions, which can protect and preserve a wide range of traditional Mediterranean foods. Novel Chitosan-based UV- and RFID sensors will be combined with AgriTrack's advanced FVCI/DSS to support digital quality monitoring, smarter logistics and retailing. Research on microbiome-based solutions, carbon dots, and customized 3D food printing technology will complement our ambitious work program.

Risultati e impatti attesi

Combined, QuiPack's solutions will significantly reduce food spoilage, increase shelf-life, and limit overall food losses by at least 50%, while enhancing the valorisation of hitherto wasted biomass, saving resources and the environment.

Through a consequent multi-actor approach and entrepreneurial stimulation, QuiPack will deliver novel opportunities and solutions for actors along the entire food chain. To achieve this, QuiPack consortium partners will use and extend their networks to communicate and share scientific-technical and practical knowledge in an audience-tailored manner. Interaction with the scientific community, current project consortia targeting similar goals, with stakeholders from the food sector, service providers, managers, regulating authorities, and consumers will inspire and spark co-creation and innovation, mutual exchange of best practices, and moreover, shall improve consumer trust and preference for sustainably produced, novel antimicrobial and smart food packaging.

Sezione 1

DIONYSUS

Operational adaptation Nexus-based systems solutions in Mediterranean

Area tematica

Wefe Nexus

Azione e Topic

(IA) Accelerate adaptation and mitigation to climate change in the Mediterranean region by deploying WEFE nexus solutions

Budget

4.077.000 €

Durata

36

Paese ed Ente coordinatore

FRANCIA
Mediterranean Agronomic Institute of Montpellier

CIHEAM MONTPELLIER

Coordinatore scientifico:
KLEFTODIMOS, Georgios

Paesi partecipanti/ 9

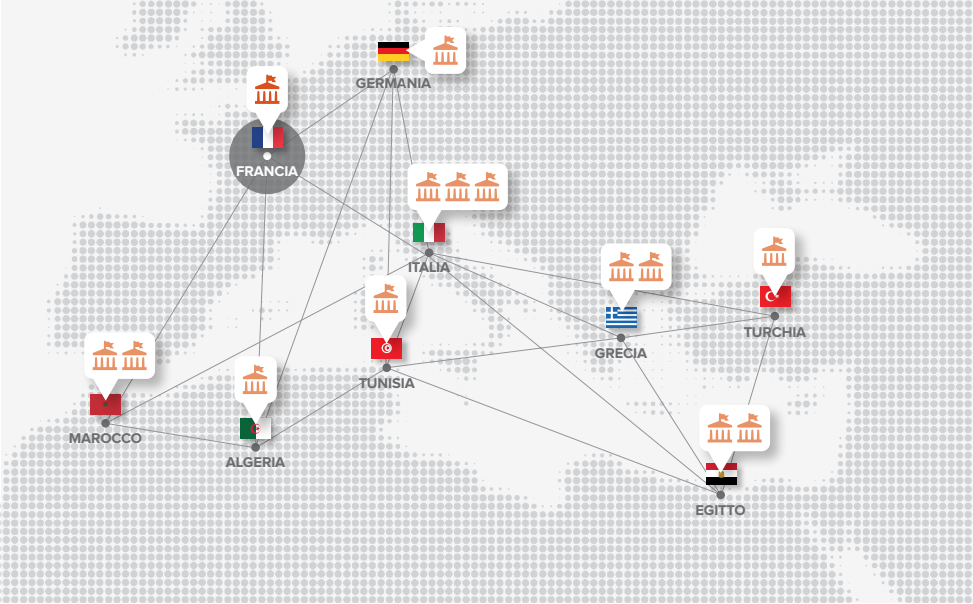
Unità di ricerca/ 14

Contesto

Based on 4 Demonstration Sites (DSs) and 3 Replication Sites (in Egypt, Greece, Morocco, and Italy) producing cornerstone agricultural products (i.e. cereals, fruits, vegetables, cotton, and other industrial crops), and considering the main trends for the next 30 years of climate, natural resources (water, soil), urbanization (including migration and labour), markets (supply, demand, prices), and macro-economic variables (i.e., GDP, interest rates, investment in agriculture), the project objective is to co-design, test and develop operational adaptation solutions via innovative business-based models for efficient use and saving of water-energy-food-ecosystem resources, and sustainable market solutions, that take advantage of local and regional initiatives, federate and engage local stakeholders, and mobilize a Cross-Sectoral Nexus adaptation tool for transition to Green Economy and Sustainable Development.

Obiettivi e contenuti

To achieve this objective, DIONYSUS seeks to promote a Cross-Sectoral Nexus adaptation tool in representative DSs by mobilizing stakeholders and policy decision-makers to establish of 7 “Action-Panels”. These “Action-Panels” will be mobilized in a participatory approach to co-design operational adaptation solutions and prioritize indicators for optimization and co-development of WEFE toolboxes and guidelines combinations. These operational adaptation solutions will be linked with existing or co-designed public policy incentives and existing Nexus technological innovations which try to mitigate the WEFE resources in the examined DSs. Then, a modelling chain, combining DAHBSIM model Computable General Equilibrium (CGE) model, will be developed with a view to supporting a quantitative strategic planning that will boost long-term adaptive capacity to dwindling WEFE resources in the Mediterranean Region. This platform will serve



Enti italiani partecipanti/ 3

Almaviva The Italian Innovation Company S.p.A

Consorzio di Tutela Arancia Rossa di Sicilia IGP

University of Catania - Dipartimento di Agricoltura Alimentazione e Ambiente

Altri Enti partecipanti/ 10

Research Center for Applied Economics for Development (CREAD) - AL

Leibniz-Zentrum Für Agrarlandschaftsforschung (ZALF) - DE

Institute of National Planning (INP) - EG

Egyptian Association for Sustainable Development (EASD) - EG

University of Thessaly (UTH) - GR

TOEV Tavropou Karditsas (TOEV) - GR

Mohammed VI Polytechnic University (UM6P) - MR

Université Ibn Zohr (UIZ) - MR

Institut National de la Recherche Agronomique de Tunisie (INRAT) - TN

Ankara University (AU) - TR

as a conceptual and evaluative tool in order to facilitate decision-makers reflection towards the designing of cross-sector policies integrating Nexus solutions into existing climate change adaptation plans. It will allow the stakeholders to i) simultaneously test more field- or market/global- driver experiments, ii) respond to a wide range of concurrent challenges raised by farmers, advisors or stakeholders, iii) assess the impacts of these innovations on the local communities' social (e.g. local employment, migration, etc.) and economic performance (e.g. inequalities), and iv) build tailored made business models to support their economic activities.

DIONYSUS addresses four specific objectives. Firstly, building 4 Demonstration Sites (DSs) and 3 Replication Sites (RSs) to develop/implement operational adaptation solutions, that produce cornerstone agricultural products, sustain local communities (e.g. local employment), and face dwindling WEFE resources. Secondly, creating of 7 Action-Panels, build on existing local initiatives, in order to co-deploy WEFE Nexus-based adaptation solutions. Thirdly, developing an innovative web-based DSS platform, called DIONYSUS-inov, will serve as an innovative toolbox providing guidelines to decision-makers. And fourthly, upscaling and integrating the operational adaptation solutions, via the creation of a "DIONYSUS Think-Tank" in the Mediterranean region, which will capitalize the results of the DSS platform.

Risultati e impatti attesi

The impact of DIONYSUS aims to support the Nexus cross-sectoral concept as a tool in climate adaptation and mitigation strategies by designing optimal adaptation Nexus solutions. The solutions will be translated to effective toolboxes and guidelines easily applicable in different study areas and facilitating the implementation of adaptation WEFE strategies which will aim to have a significant positive impact on local employment, rural living standards, household income development, national GDPs, access to markets, imports/exports, inequalities, and WEFE resources.

Area tematica

Wefe Nexus

Azione e Topic

(IA) Accelerate adaptation and mitigation to climate change in the Mediterranean region by deploying WEFE nexus solutions

Budget

4.055.000 €

Durata

36

Paese ed Ente coordinatore

SPAGNA
Forest Science and Technology Centre of Catalonia

CTFC

SCIENCE FOR FOREST MANAGEMENT, BIODIVERSITY & BIOECONOMY

Coordinatore scientifico:
MANEJA, Roser

Paesi partecipanti/ 7

Unità di ricerca/ 10

Sezione 1

RES-MAB

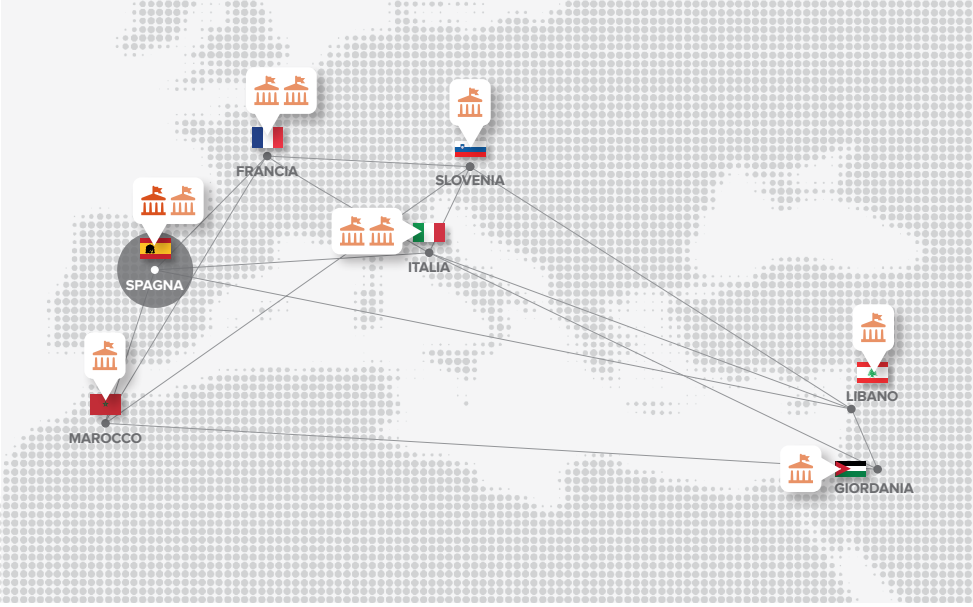
Promoting WEFE Nexus-based adaptation and mitigation solutions and landscape resilience to climate change in the Mediterranean Biosphere Reserves

Contesto

In a scenario of climate change-associated extreme events, temperature rising, changes in rainfall patterns, and an increasing demand for water, food and energy, Mediterranean countries face various common challenges. These challenges could affect food security, nutrition and livelihoods, triggering migration and increasing risks and vulnerability in a region with limited adaptive capacity. The Mediterranean region, one of the most responsive regions to climate change, hosts exceptional ecological diversity and socio-cultural richness originating from three continents. The multiple interacting climate hazards and anthropogenic drivers of change in such a vulnerable hotspot require specific adaptation and mitigation measures that support populations at higher risk of exposure. Moreover, adaptation and mitigation plans need to tackle the trade-offs and synergies among the management programs of the different Water-Energy-Food-Ecosystems (WEFE) sectors to promote multifunctional and resilient landscapes on the path to a Green Economy and Sustainable Development. In this sense, there is a need for cooperating and establishing cross-sectoral management plans and policies to address climate challenges across Mediterranean countries, since all face significant risks due to climate change.

Obiettivi e contenuti

In this context, the WEFE-Nexus Socioecological Modelling Tool (WEFE-SEM Tool) proposed by the RES-MAB project aims to simultaneously address current global challenges bringing together different actors within the WEFE Nexus – policymakers, public authorities, private sector, farmers, local communities and other end-users – to negotiate conservation and development trade-offs, and promote circularity in the management, use, and development of resources. The WEFE-SEM Tool will provide a framework for addressing the increasingly complex



Enti italiani partecipanti/ 2

Veneto Regional Park of Po Delta Authority

Istituto Oikos

Altri Enti partecipanti/ 7

Alto Bernesga Biosphere Reserve Foundation - ES

Mont-Ventoux Natural Regional Park - FR

Organization for the Defense and Management of AOC Ventoux (AOC Ventoux) - FR

Royal Society for the Conservation of Nature (RSCN) - JR

Association for the Protection of Jabal Moussa (APJM) - LB

National Agency for the Development of Oases and Argan Zones (ANDZOA) - MR

Public Institute Park Skocjan Caves (PSJ) - SL

and widespread social, environmental and political drivers of change that typically transcend traditional management boundaries.

Following this multisectoral landscape approach, the RES-MAB project will co-deploy WEFE Nexus-based adaptation and mitigation solutions (WEFE Nexus solutions) in seven Biosphere Reserves (BR) that act as large demonstration sites (in Spain, France, Lebanon, Morocco, Jordan, Italy, and Slovenia) belonging to the Mediterranean Thematic Network of Biosphere Reserves (MedMaB). The MedMaB Network includes 74 sites of excellence, which foster the harmonious integration of people and nature for sustainable development through participatory dialogue; knowledge sharing; poverty reduction and human well-being; and respect for cultural values and societal resilience.

Risultati e impatti attesi

Thus, it contributes to the 2030 Agenda and the Sustainable Development Goals (SDG). This framework will facilitate the implementation of interdisciplinary approaches to manage interactions and transformations between environmental and socio-economic systems. Although the natural, cultural, political and socio-economical specifics may vary among the BR, they all face similar challenges that can be addressed by an integrative landscape management system and the transformative approach of the WEFE Nexus. This process will enable the development of sustainable market solutions and innovative business models targeting WEFE Nexus solutions and facilitate their deployment in other MedMAB BR in the future.

In line with the Nexus-theme call, the RES-MAB general objective is to promote an integrated and effective WEFE Nexus-based management approach contributing to accelerate landscape adaptation and mitigation to climate change in Mediterranean Biosphere Reserves. The project will examine the benefits of cross-sectoral approaches through collaboration between countries and multi-actor participatory processes to jointly implement WEFE Nexus solutions and innovative business models, while working on cross-sectoral policy integration, sustainable and inclusive economic development, job creation and the resilience of disadvantaged groups.

Altri Progetti

I Progetti sono in ordine per area tematica (Water Management; Farming Systems; Agri-food Value Chain; Nexus). All'interno di ciascuna area tematica, sono illustrati prima i Progetti di Sezione 1 e poi quelli di Sezione 2.

Area tematica

Water Management

Azione e Topic

(RIA) New governance models to define best practices for sustainable water management and conflict mitigation

Budget

440.000 €

Durata

36

Paese ed Ente coordinatore

TUNISIA

University of Carthage, Higher Institute of Environmental Sciences and Technologies (HIEST)

جـامـعـة قـرطـاج
Université de Carthage

Coordinatore scientifico:
ELAOUD, Anis

Paesi partecipanti/ 6

Unità di ricerca/ 13

Sezione 2

Sm@wa-Medi

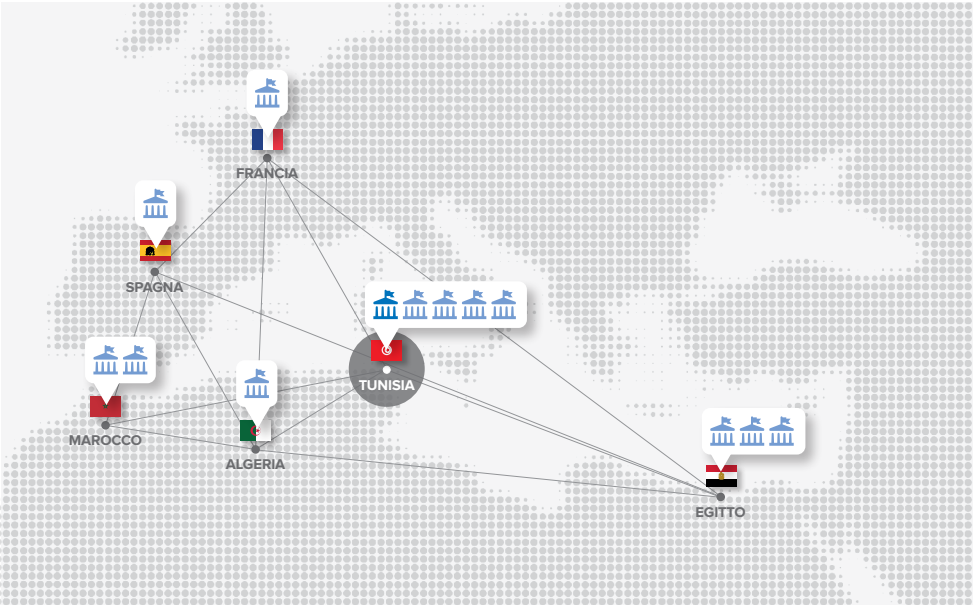
New Sm@rt Process Combining Nanotechnology-Magnetic-Filtration for Brackish and Natural Water Treatment to Enhance Irrigation Efficiency and Agricultural Yield in the Mediterranean basin

Contesto

In the Mediterranean basin, climatic changes in 30 years will lead to a temperature increase of 2°C to 4°C which would reduce rainfall by up to 30%. This fact will increase the establishment of water limits. In addition, water demand is expected to be multiplied by 2 and even 3. Furthermore, its utilization is unbalanced by various sectors (Industry, Tourism, Agronomy,...) and at different scales (The field of agriculture is considered to be the most consuming water from 70% to 80%). This situation contributes to the degradation of the irrigation water, (essentially scarcity and high salts concentrations) which is accentuated by overexploitation of the natural resources, poor management and pollution. These facts will limit the development of the agriculture and affects crop yields which increase food prices and food security challenges.

Obiettivi e contenuti

In order to overcome the problems of charged water and scaling problems, researchers have been proposing several techniques for water treatment, such as desalination, filtration, electrodialyse,... Desalination treatment requires high energy consumption and high technical skills for monitoring and changing membranes. Furthermore, the high costs of the used energy causes excessive costs and additional burdens to farmers, investors and governments. The classical filtration process is based on commercial membranes and also presents a weak technical efficiency method for water treatment. This is due to the weak capacity of the membrane to trap small sizes of both minerals and salts having about tens of nanometers scales. To overcome such drawbacks, recent techniques such as magnetic and nanotechnology treatments have been developed. The incorporation of magnetic fields in agriculture is considered a potential solution to reduce the salinity problems of the irrigation water. The optimization of the



Altri Enti partecipanti/ 12

Faculty of Sciences Sfax Universty of Sfax (FSS)- TN

National Center for Research in Materials Science Borj Cedria (CNRSM) - TN

Agence de la vulgarisation et de la formation agricoles Tunisie (AVFA) - TN

TELCOTEC - TN

Faculty of Nature and Life Sciences, University of El Oued (LBEH) - AL

National Research Center Cairo (NRC) - EG

City of Scientific Research and Technological Applications (SRTA) - EG

Delta Water - EG

University of Castilla-La Mancha, Instituto Regional de Investigación Científica Aplicada (IRICA) - ES

University of Grenoble Alpes, University Savoie Mont Blanc, CNRS, Grenoble INP, LEPMI, Grenoble, France, INP - FR

Agronomy and veterinary institute Hassan II (IAV) - MR

National School of Applied Science, Ibn Zohr University- Agadir Morocco (ENSA) - MR

influencing agronomic factors combined to the utilization of magnetic fields, offers different advantages such as increase of yields crops, water productivity, reduction of costs,... Thus, magnetized water used for irrigation improved the efficiency of irrigation systems and the agricultural crops production. In fact, magnetic treatment of irrigation water improves root growth by increasing soil nutrient availability and leading to a better assimilation of nutrient and so an increase in fertilizers efficiency. On the other hand, nanotechnology revolution and are introduced to solve the water quality problem by effective and cheap treatment techniques. The percentage of treatment (charges) can reach up to 85% of specific elimination. In agriculture, multifunctional nanomaterials are simultaneously experimented as mineral nano-filters, salts and nano-fertilizers.

Risultati e impatti attesi

This technique could be an efficient strategy to specially enhance the quality of irrigation water, to foster plant growth and agricultural yield. The project includes some sustainable development goals (SDGs) (mainly the improve the water management, the quality and increase agricultural production, SDG2 end hunger, achieve food security and improved nutrition and promote sustainable agriculture, SDG6 goes beyond drinking water, sanitation and hygiene to also address the quality and sustainability of water resources ....). In this context, a new precise sm@rt process (Sm@wa-Medi) applied in the field of agriculture will be developed based on the combination: Nanotechnology-Magnetic-Filtration treatments using nanofiber. So, the project investigates machine learning and intelligents systems for learning, modeling, optimization, and prediction of parameters of the water treatments for enhanced agriculture. The objective of Sm@wa is to offer a system for water treatment technology and solutions that should help Mediterranean to better govern and manage water resources and protect the quality of water, soil and increase crop yields by improving the performance of irrigation systems and minimizing costs and increasing profit margins.

Area tematica

Farming Systems

Azione e Topic

(IA) Actions to restore and return degraded lands in the Mediterranean region into productive agroecosystems

Budget

4.132.500 €

Durata

36

Paese ed Ente coordinatore

SPAGNA
Fundació Universitària Balmes

FUB
FUNDACIÓ
UNIVERSITÀRIA
BALMES

Coordinatore scientifico:
ARMENGOT, Laura

Paesi partecipanti/ 7

Unità di ricerca/ 16

Sezione 1

TRANSFORMED

Transforming the Mediterranean region through agroforestry: large scale restoration of degraded lands by overcoming the socioeconomic and sociocultural barriers for agroforestry adoption

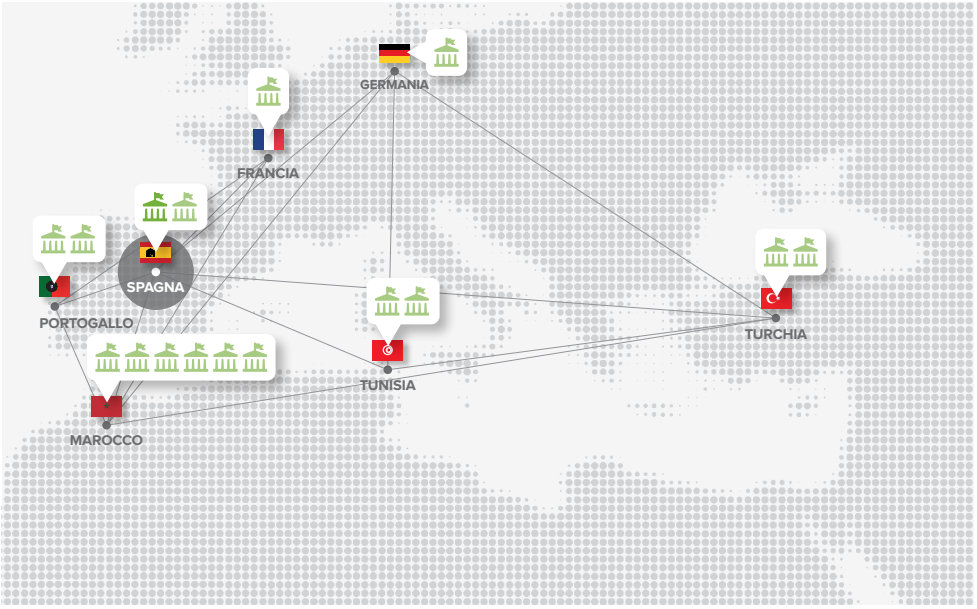
Contesto

The consortium of TRANSFORMED is unique for the strength, complementarity and interdisciplinarity of its consortium. Previous work of the consortium has provided solid background on the adoption constraints of AFS but also on the best suitable approaches to overcome them. These experiences are essential for designing a project with the ambitionof having impactnot only on the selectedregions but also on a larger scale.

TRANSFORMED is completely aligned with the scope of PRIMA 1.2.1-2023 and, in addition to the expected mentioned impacts, it will contribute to climate change mitigation and adaptation, create new market opportunities and promote traditional crops and culture.

Obiettivi e contenuti

The overall objective of TRANSFORMED is to support and promote a large scale implementation of successful agroforestry systems (AFS) in saline and highly soil degraded areas as a tool to restore soil health and increase biodiversity and productivity of the agroecosystems by overcoming the identified barriers for adaption. TRANSFORMED is designed with the premise that previous research and technological advances made by both researchers and practitioners have evidenced that certain AFS crops and designs are successful cost-effective tools for soil restoration in highly degraded areas. However, a large-scale up adoption will only occur when the main socio-cultural, -economic, and -political barriers are considered in the restoration strategies. TRANSFORMED brings together social and environmental scientist, agronomist and economist, practitioners, private sector, decision and policy makers, governmental national agencies and civil society in a multidisciplinary and multi-actor environment, to create an enabling context for AFS adoption.



Altri Enti partecipanti/ 13

Universidad de León (ULE) - ES

University of Kassel (UK) - DE

Research Institute for Organic Agriculture (FiBL) - FR

AGriculture, ENvironment and Development for the Avenir (AGENDA) - MR

AL Moutmir BU - (UM6P) - MR

DAR AL CAROUBE - MR

Societe L'ouest Marocain (SOM) - MR

El Baraka farmers association - MR

University Mohammed VI Polytechnic (UM6P BU) - MR

University of Évora (UÉvora) - PT

Terracrua Design - PT

International Center for Africultural Research in the Dry Areas (ICARDA) - TN

Technical Center of Organic Agriculture (CTAB) - TN

Bahri Dagdas International Agricultural Research Institute (BDIARI) - TR

Nature Conservation Centre Foundation - Doga Koruma Merkezi Vakfi (DKM) - TR

Risultati e impatti attesi

TRANSFORMED has identified 4 successful AFS restoration experiences, lighthouses, in Morocco (Oulad Bou Said/Oulad Jdi Commune, and Lahyatla, Oulad mrabet commune), Tunisia (Sbaihia site), and Turkiye (Konya/Sarayönü): carob AFS, argan AFS, sylvopastoral system and multilayer AFS for wind-erosion protection. TRANSFORMED will promote and adapt these experiences to 11 new different regions, including saline, wind-eroded and highly degraded land, i.e., Sebt Oulad Bour Hadi Sebt Jahjouhe and Lahyatla, Oulad mrabet, Ben Guerir in Morocco, Konya (Cihanbeyli, Ereğli,), Kırşehir (Çiçekdağı) in Turkiye and Zaghouan and Sousse in Tunisia. TRANSFORMED will promote the use of more than native and traditional plants, some of them with high economical value and with high potential for value chain development. In addition, the successful AFS restoration in Montado (Portugal) will be the lighthouse for policies (result-based models) and used as one of the planned activities for south-north and north-south learning exchange.

Area tematica

Farming Systems

Azione e Topic

(RIA) A step toward carbon-neutral farms: coupling renewable energy sources with circular farming systems

Budget

609.400 €

Durata

36

Sezione 2

3D-STELLAR

3D Solar disTillEr and flash pyroLysis for recycling oLive mill wastewater into irrigation water and biochARadoption

Contesto

The countries of the Mediterranean basin produce about 97% of the world's olives, which represents to up to 3 million tons of olive oil per year.

The various processes of olive oil extraction generate huge amounts of solid and liquid waste. It is estimated that the processing of 1 ton of olives would generate on average 1 m3 of Olive Mill Waste Water (OMWW).

Obiettivi e contenuti

The 3D-STELLAR project aims to treat and valorize the toxic OMWW according to the principles of green and sustainable chemistry for a circular economy. Current regulations only authorize the direct spreading of these materials in a small proportion of the volumes generated, and industrialists are looking for other ways to manage this toxic liquid waste.

The 3D-STELLAR consortium will explore the possibilities of treating these effluents and proposes to study the means of accelerating their evaporation/drying in order to better transform and valorize them. 3D-STELLAR project is based on two main technologies: 3D-Solar Distillers, which have the advantage of having a low environmental impact to clean water and, flash pyrolysis with thermal shock that does not generate by-products and is very fast.

A mobile prototype (semi-pilot) capable of treating the equivalent of a 1 m3 tank will be built and installed in the field to validate the concept described in the 3D-STELLAR project.

Paese ed Ente coordinatore

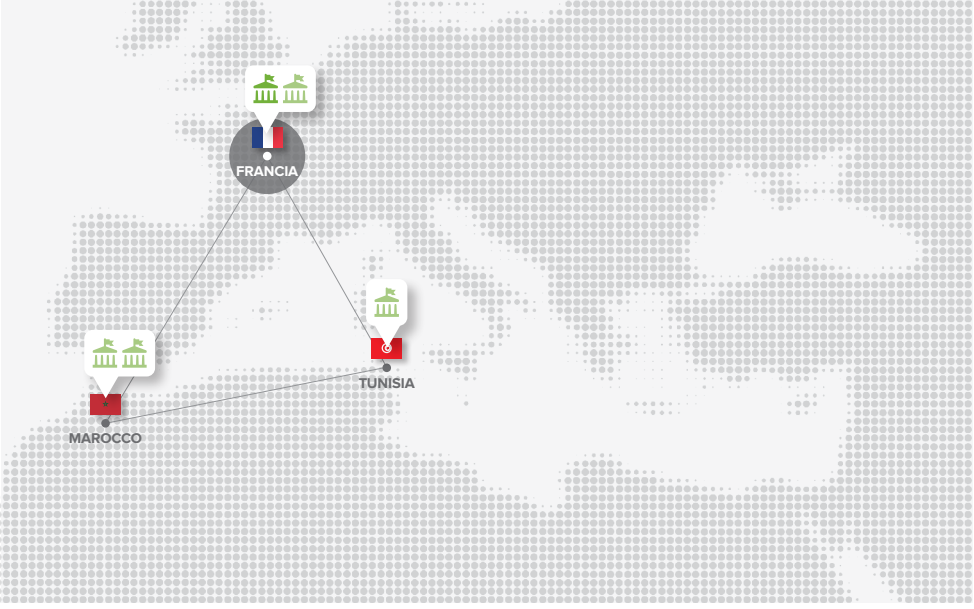
FRANCIA

Institut Jean Lamour

Coordinatore scientifico:
NICOLAS, Vincent

Paesi partecipanti/ 3

Unità di ricerca/ 5



Altri Enti partecipanti/ 3

Génie des procédés FRIgorifiques pour la Sécurité alimentaire et l'Environnement (FRISE) - FR

Laboratoire Génie des Matériaux pour Environnement et Valorisation (GeMEV) - MR

Laboratory of Water, Energy and Environment (LR99ES35) (Lab 3E) - TN

Risultati e impatti attesi

Our proposal addresses section 2.2 “Farming systems”, A step toward carbon-neutral farms: coupling renewable energy sources with circular farming systems. This project proposes a circular, low-carbon approach to olive oil processing. With the implementation of 3D STELLAR, water will be recycled and harvested using solar energy and the concentrated sludge will be converted into nutritious/ value-added products. Thus, Mediterranean farms will benefit from the water for irrigation/reuse, while the remaining sludge will be used directly as fertilizer and/or will be transformed into biochars to amend the soil.

Area tematica

Farming Systems

Azione e Topic

(RIA) A step toward carbon-neutral farms: coupling renewable energy sources with circular farming systems

Budget

1.181.000 €

Durata

36

Paese ed Ente coordinatore

TUNISIA
INRAT, Institut National de Recherche Agronomique de Tunisie

Coordinatore scientifico:
ZOGHLAMI, Rahma

Paesi partecipanti/ 7

Unità di ricerca/ 12

Sezione 2

CombiFarm

Combining low-cost biochar, biogas, and cyanobacteria fertigation technologies with low-input crops for sustainable bioproducts in smart circular farming systems

Contesto

The CombiFarm project develops living labs to demonstrate: (1) circular farming systems combining energy, carbon and nutrient recovery systems based on low-cost biochar, biogas, and microalgae fertigation technologies together with (2) sustainable cropping systems based on low-input crops (alfalfa, sorghum, durum wheat, pearl millet, lentils, quinoa, chickpea, aloe vera, prickly pear cactus, salicornia, glassworts, aromatic crops) and (3) solar-powered smart drip irrigation systems to generate (4) high-value bioproducts including food, feed, cosmetics and biopesticide production at local level.

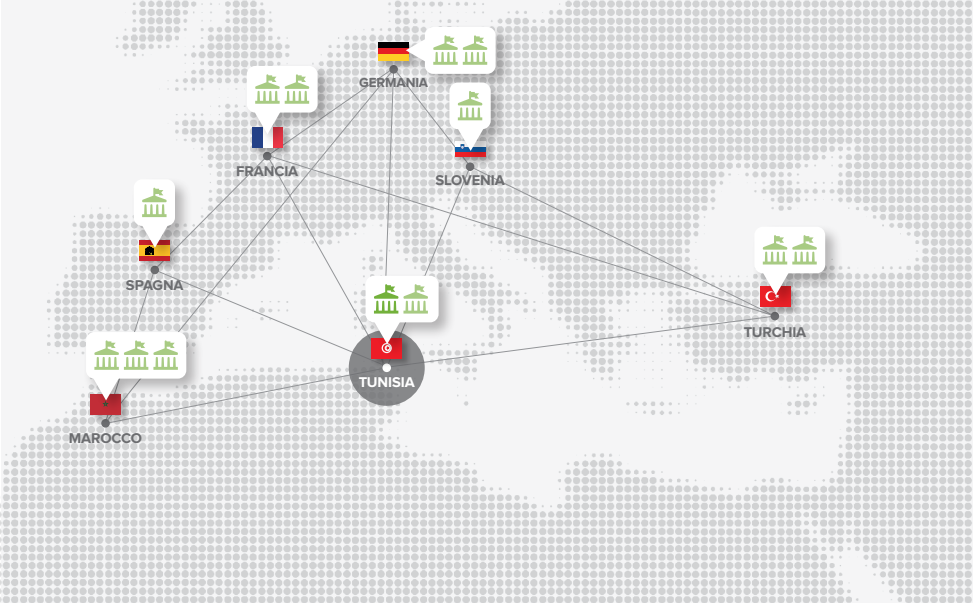
Obiettivi e contenuti

The project will develop and demonstrate the integrated systems in real conditions at selected pilot sites near Settat, Ait'Mhamed and Dakhla island, Morocco, as well as Mateur, Tunisia, and Ljubjana, Slovenia.

Low-cost pyrolysis cookstoves of 30L following Indian-type "Anila stove" batch Top-Lid Up-Draft (TLUD) design will be deployed at the pilot sites for combined production of biochar (soil conditioner) and heat (clean cooking from solid agro-industrial residues.

In Settat, a 10m3 biogas reactor currently installed by a Moroccan company using local sustainable materials (brick walls and earth insulation) will be used in the project. Downstream of the biogas reactor, a press filter will be installed for solid-liquid separation, which can be facilitated by biochar addition.

Microalgae cultivation will take place in mixotrophic mode (microalgae operating in synergy with bacteria for bioconversion of organic matter) in different configurations: 1) on separated liquid effluent of the biogas reactor (in Settat, Morocco),



Altri Enti partecipanti/ 11

Centre des Recherches et des Technologies des Eaux (CERTE) - TN

Hamburg University of Technology (TUHH) - DE

SCC Umwelttechnik GmbH (SCC) - DE

Laboratoire de Genie des Procedes - Environnement - Agroalimentaire (GEPEA-CNRS) - FR

Mind and go - FR

Institut National de la Recherche Agronomique (INRA) - MR

Université Hassan Ier (UH1) - MR

Sultan Moulay Slimane University (USMS) - MR

University of Ljubjana (UL) - SL

Eskisehir Technical University (ESTU) - TR

Geobilgi Bilisim Teknolojileri (GEOBILGI) - TR

2) on aquaculture effluents (in Dakhla, Morocco),

3) on agro-industrial effluents, including olive oil and cheese whey (in Mateur, Tunisia and Ljubjana, Slovenia). Microalgae will not be harvested, but delivered to the test fields as fertigation (ferti-irrigation) with biostimulant effect, hence saving the costs of microalgae harvest. Microalgae biofilms will be grown, allowing for direct harvesting as transportable biostimulants.

Risultati e impatti attesi

Public access of pilot monitoring data will be ensured by linking IoT sensors to a cloud-based digital platform. The effects of biochar application as soil improver, as well as microalgae fertigation will be monitored. Additionally, the design and operation of smart solar-powered micro-irrigation systems will be optimized. The software will be delivered with the support of participating IT SMEs on a user-friendly multi-platform open-access interface compatible with smartphones with support from farmers and professionals following user-centered design.

The quality and health benefits of farming products will be evaluated, including animal feed, cosmetics, and biopesticide. The parameters of biofertilizer addition will be optimized in pot experiments prior to up-scaling in experimental fields.

Following a living lab approach, local farmers and companies will be involved in the monitoring and co-development of the project through local citizen advisory boards at each pilot site, including delivery of feedstock, monitoring of the products, testing and optimization of software products, co-creation of online lectures and training workshops for students, farmers and professionals.

Socio-economic and environmental challenges affecting local farmers in the energy-agriculture nexus will be evaluated and good practices will be drawn. A GIS mapping tool will be developed tu support optimal farm management for smallholders, along with an application to optimize the design and operation of solar pumping systems. A staff exchange program will promote exchanges of students, experts and engineers for specific activities.

The project involves 12 partners from 6 countries, including 5 partners from EU countries (with 1 SME), and 7 partners from the MENA region (with 2 SMEs).

Area tematica

Farming Systems

Azione e Topic

(RIA) A step toward carbon-neutral farms: coupling renewable energy sources with circular farming systems

Budget

1.035.000 €

Durata

36

Paese ed Ente coordinatore

ALGERIA
University of sciences and technologies Houari Boumedien

Coordinatore scientifico:
BEKKARI, Nadjia

Paesi partecipanti/ 6

Unità di ricerca/ 10

Sezione 2

EcoFertiS

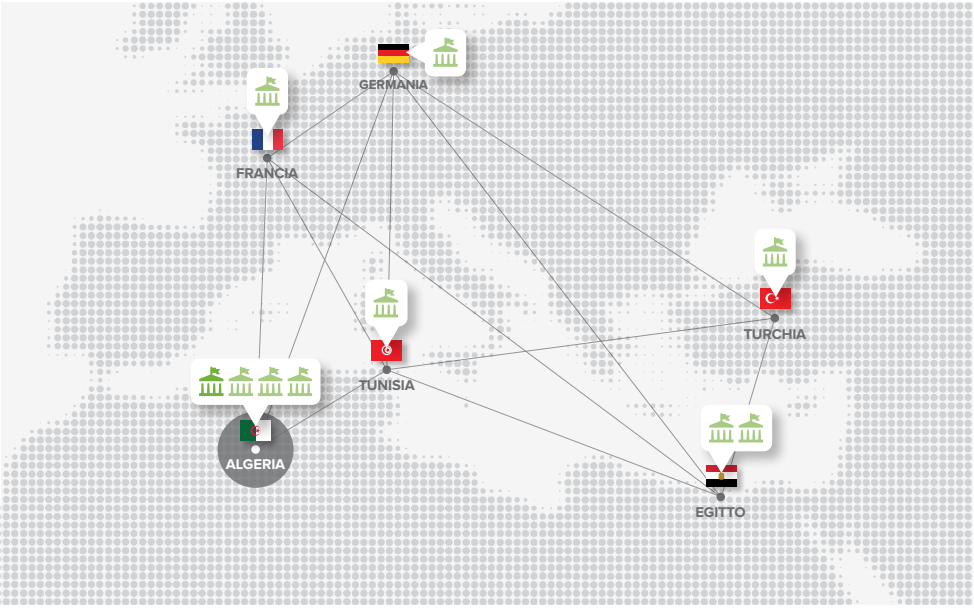
Innovative processing of manures and biowastes of Eco-friendly Fertilizers

Contesto

Assurer une production agricole durable devrait commencer par la gestion et l'amélioration des sols. L'objectif de la proposition EcoFerti est d'adopter des stratégies intégrées pour la gestion des déchets agricoles afin d'améliorer la maniabilité du sol, un bon drainage, la capacité de rétention d'eau et une disponibilité adéquate des éléments nutritifs. Une telle amélioration de la qualité du sol sera pour l'installation d'une variété de cultures nécessitant une intervention agricole pour la production d'aliments verts pour le bétail de berger. Les avantages de la matière organique du sol comprennent l'amélioration de la structure et de la fertilité du sol qui favorisent un environnement d'enracinement favorable pour les plantes en maintenant un rapport carbone-azote. Les avantages de la réalisation d'un tel projet sont l'introduction de matières organiques (Bio-compost, Biofertilisants, Ready Humus, et dérivés), et minérales (Composés azotés, Incinérats minéraux) au sol des exploitations dédiées à l'installation de cultures intensives. . Ces amendements résultant d'un système de recyclage des déchets agricoles et des fumiers/déjections des zones d'élevage assureront une amélioration de la structure du sol, de l'infiltration, du drainage, de la capacité de rétention d'eau et des nutriments et de la fertilité des sols. A long terme, ces modifications favoriseront un milieu d'enracinement favorable pour les végétaux choisis pour l'aménagement des terres agricoles. La matière organique utilisée servira également de source d'énergie pour la production de biogaz utile à une auto-alimentation en énergie du système agricole mis en place.

Obiettivi e contenuti

À travers le projet EcoFerti, un processus par lequel le recyclage et la valorisation des déchets organiques/fumiers seront développés ; plusieurs modules de travail seront menés en partenariat avec plusieurs institutions méditerranéennes



Altri Enti partecipanti/ 9

Centre de Recherche en Analyse physicoChimique (CRAPC) - AL

Ecole Nationale superieur d'Agronomie (ENSA) - AL

Université Abdelhamid Ibn Badis Mostaganem (UMAB) - AL

WAZIUP - DE

Arab Academy for Science, Technology and Maritime Transport (AASTMT) - EG

South Valley University (SVU) - EG

Université de Reims Champagne-Ardenne (URCA) - FR

Researcher at Institut National de Recherche en Génie Rural, Eaux et Forêts (INRGREF) - TN

International Agricultural Research and Education Center (IARTC) - TR

impliquant chacune un programme de travail de mise en place et de contrôle des processus. Les lots de travaux seront suivis chronologiquement en commençant par la valorisation des déchets agricoles et organiques, le prétraitement, et l'analyse organique, puis un Pré-traitement et Valorisation durable des produits dérivés est obtenu en adoptant plusieurs stratégies opératoires de dérivatisation de la matière première. En outre, les conditions agronomiques des épices de forge, les pratiques agricoles et les cultures seront suivies en relation avec les paramètres agronomiques et bioclimatiques, le processus d'irrigation des cultures installées et déterminées en relation avec les caractéristiques des sols des nouvelles terres consacrées à chargement des récoltes. Ensuite, le suivi industriel et les conditions locales de production de Biogaz seront définis et assurés pour la valorisation énergétique. Par la suite, les étapes d'analyse et de formulation des produits du marché, d'étude marketing et de commercialisation seront définies en fonction de la gamme des produits obtenus.

Risultati e impatti attesi

Pour chaque étape, les produits obtenus doivent d'abord être évalués en laboratoire à l'aide d'équipements de pointe, puis sur le terrain sur la réceptivité du sol. Par conséquent, les données des résultats seront analysées en permanence et mises à jour au moyen de rapports périodiques. Les scores attendus sont principalement liés à l'amélioration des sols agricoles, à une production agricole plus saine et à l'évolution agricole. De plus, des impacts positifs très importants pourraient être obtenus, concernant la préservation de l'environnement conjointement avec une activité économique efficace.

Area tematica

Farming Systems

Azione e Topic

(RIA) A step toward carbon-neutral farms: coupling renewable energy sources with circular farming systems

Budget

805.000 €

Durata

36

Paese ed Ente coordinatore

SPAGNA
Universitat Politècnica de València

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Coordinatore scientifico:
LLORET MAURI, Jaime

Paesi partecipanti/ 4

Unità di ricerca/ 7

Sezione 2

PAVER

Precision AgriVoltaics for Carbon Neutrality Enhanced Production and Reduced Environmental Impact in Greenhouse

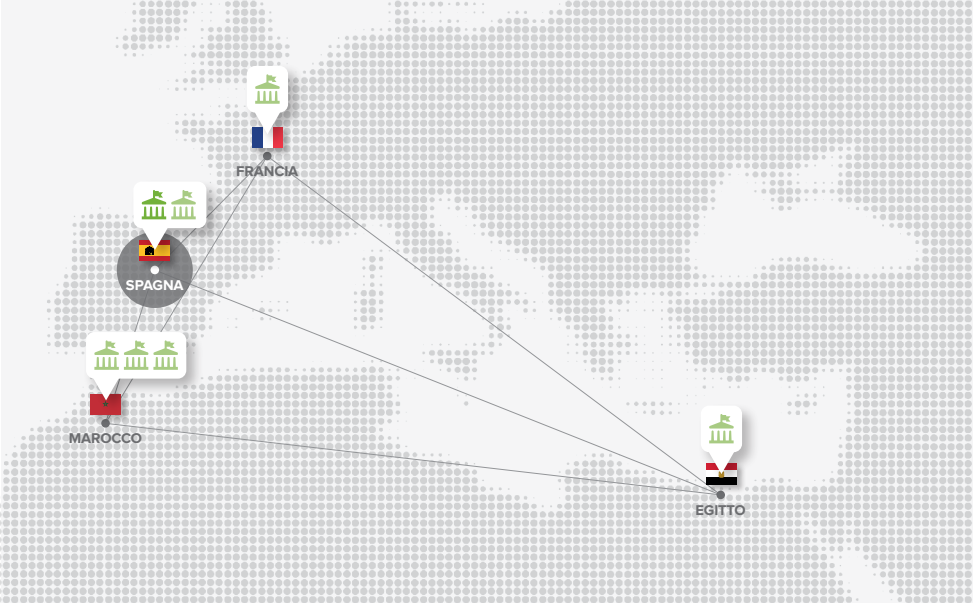
Contesto

The aim of this project is to design and develop an intelligent, robust, feasible and sustainable AIoT-Agrovoltaic platform/system capable of being deployed to any type of greenhouse, irrespective of climate and type of crop, in regions with limited access to the electrical grid and/or insufficient quantity/quality of irrigation water.

Obiettivi e contenuti

To achieve this, under the project framework, we will implement software modules based on advanced artificial intelligence algorithms to jointly control and optimize: i) the performance of photovoltaic panels, ii) the monitoring of physical parameters through sensors (such as cameras, PAR, soil moisture, temperature, and air quality, CO2 level), and the iii) operation actuators in the crop (such as fertilization systems, irrigation, and lighting on/off) in real-time. The ultimate goal is to enhance crop efficiency (precise knowledge of planting, irrigation, and harvesting periods is crucial for optimal crop yield) and photovoltaic performance. Furthermore, to improve crop growth, the AIoT system can be used i) to monitor the CO2 level in the growing environment. When the CO2 level falls below a certain threshold, the CO2 enrichment system will be activated to increase the CO2 concentration, and ii) to control the temperature at night; when it falls below a determined value, a thermal screen will be deployed to conserve temperature in the greenhouse.

Regarding the photovoltaic issue, the energy harnessed by the photovoltaic cells will have a two-fold purpose: self-sustaining powering the greenhouse's operations and purifying /desalinating water for irrigation use. The results of this project will further contribute to food and power sustainability by applying viable and cost-efficient technology solutions to improve all the processes related to greenhouse productivity. Thanks to the integration of plug-and-play hardware sensors and software modules, a complete digital twin of a greenhouse is created. As a result,



Altri Enti partecipanti/ 6

Universidad Politécnica de Cartagena (UPCT) - ES

Green Power for Agriculture and Irrigation (GPAI) - EG

Universite de Haute Alsace (UHA) - FR

National Institute of Agricultural Research (INRAM) - MR

University Sultane Moulay Slimane (USMS) - MR

Ste Reowa sarl - MR

both expert and non-expert users can easily adjust and interact with any parameter of the platform. This digital twin can be installed practically anywhere with minimum environmental impact and simultaneously serve as a flag system or product of the EU exportable technology for the agro field. The OO of this project is:

Boost the adoption of solar agrivoltaics production in cascade hydroponic greenhouses controlled by AIoT devices to reach carbon neutrality in food production.

Finally, several efforts will be carried out to engage local stakeholders and early adopters thanks to the conduction of capacity-building activities, creating a network of experts, and promoting the local value chain. The capacity-building activities are critical to ensure the adoption of the proposed intercropping system. In this issue, the coordinator has a long and well-known reputation.

Risultati e impatti attesi

A clear establishment of the impact is based on the partners' expertise and the dissemination-communication-exploitation strategy later on to ensure this proposal's success. One of the most critical issues is ensuring that the project results significantly impact the stakeholders. Nonetheless, as in our consortium, relevant stakeholders are included as partners to ensure that the project deliverables will reach high impact and will add an observable change to the involved SMEs.

Thus, the combined effort of researchers and companies from different disciplines, such as agronomy, environmental, telecommunications, and electronics working together with NGOs and public authorities in a transnational and multidisciplinary quadruple helix is needed. This project is entirely aligned with the scope of the call; we have developed specific objectives (see Part II) according to the expected impacts and the challenge and scope of the call. Our intercropping system is designed to be a holistic approach to addressing smallholders' environmental and socioeconomic problems.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.507.291,56 €

Durata

36

Paese ed Ente coordinatore

TURCHIA
Bilgi University

İstanbul Bilgi University

Coordinatore scientifico:
AKTAS, Gulsen Betul

Paesi partecipanti/ 5

Unità di ricerca/ 7

Sezione 2

A- BLOCK

Nano-Enabled Antimicrobial Food Packaging Incorporating Natural Bioactives from Mediterranean Agri-Wastes

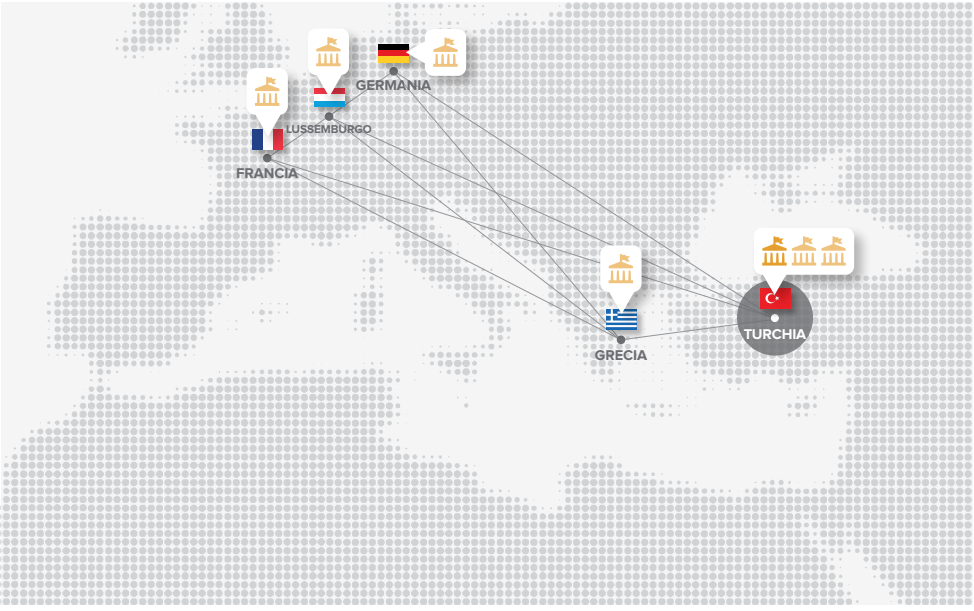
Contesto

Active food packaging systems have gained a lot of interest as they play a critical role in extending the shelf life of food products while reducing the risk of microbial growth. It is well known that extending the shelf life of food by even one day has a huge impact on sustainability in terms of cost-effectiveness, reduction of food waste and transport costs.

Obiettivi e contenuti

The main objective of A-BLOCK project is to develop novel antimicrobial food packaging films to inhibit or retard the growth of microorganisms present on food surface, reducing food losses along the production and supply chains and increasing food safety and prolonging shelf life. We aim to achieve enhanced performance by patterning with biomimetic nanopillars and incorporating natural antimicrobial / antioxidant (AM/AO) agents extracted from agri-waste of Mediterranean countries.

To this end, active biomolecules from selected agri-waste will be extracted using green solvents and then encapsulated using different encapsulation systems; namely single species cultivated diatom frustules, micro/nanoemulsions and microcapsules. In parallel, biomimetic nanopillars will be fabricated on the surface of the packaging material to inhibit microbial growth and will be combined with frustules, micro/nanoemulsions and microcapsules loaded onto packaging films. In this project, we are targeting three packaging polymers, namely Biaxially Oriented Polypropylene (BOPP), polyethylene (PE) and polyamide (PA), which will be loaded with the encapsulated AM/AO agents using extrusion and/or coating methods. The optimal packaging film configuration will be tested on real foods (raw meat cuts, fresh-cut vegetables, cakes) against specific target microorganisms for each food product, through challenge studies. Migration, barrier, microstructural, thermal, mechanical and optical properties of the developed packaging system will be



Altri Enti partecipanti/ 6

Ülker Bisküvi (ÜB) - TR

Polinas (PPC) - TR

German Institute of Food Technologies (DIL) - DE

Laboratoire d'Automatique, de Genie des Procedes et de Genie Pharmaceutique (LAGEPP) - FR

National and Kapodistrian University of Athens (NKUA) - GR

Luxembourg institute of science and technology (LIST) - LX

evaluated, in addition to the regulatory and sustainability assessment to define its circularity potential and environmental impacts compared to conventional packaging systems.

Risultati e impatti attesi

A-BLOCK involves interdisciplinary activities, including engineering, materials science, natural products chemistry, food technology, and microbiology. A-BLOCK brings together stakeholders from the academia and the industry with demonstrated knowledge and experience in science and the exact technology areas fundamental to the success of the project.

A-BLOCK enables the creation of new business lines specific to Mediterranean region such as collection, processing and valorisation of wastes, sales and commercialization of valuable extracts / agents with validated and science-backed effects contributing to local economies and livelihoods.

Overall, the proposed packaging system is expected to improve food safety, reduce food waste, provide extended shelf-life in order to meet market demands for clean label solutions.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.559.053,96 €

Durata

36

Paese ed Ente coordinatore

SPAGNA

Spanish National Research Council

CSIC
Consejo Superior de Investigaciones Científicas

Coordinatore scientifico:
FABRA, María Jose

Paesi partecipanti/ 8

Unità di ricerca/ 10

Sezione 2

EVOLVEPACK

dEsign, processing and characterization of innoVative biOdegradable and compostabLe actiVE PACKaging structures to improve food safety of mediterranean foods

Contesto

The project Consortium is composed of 10 Partners from 8 different countries, covering a range of complementary competences and skills, aligned with the European Strategy for Plastics in a Circular Economy from 2018, which seeks to contribute to one of the Sustainable Development Goals (SDGs) from the United Nations, related to prevention and reduction of marine contamination, promoting the use of more sustainable materials.

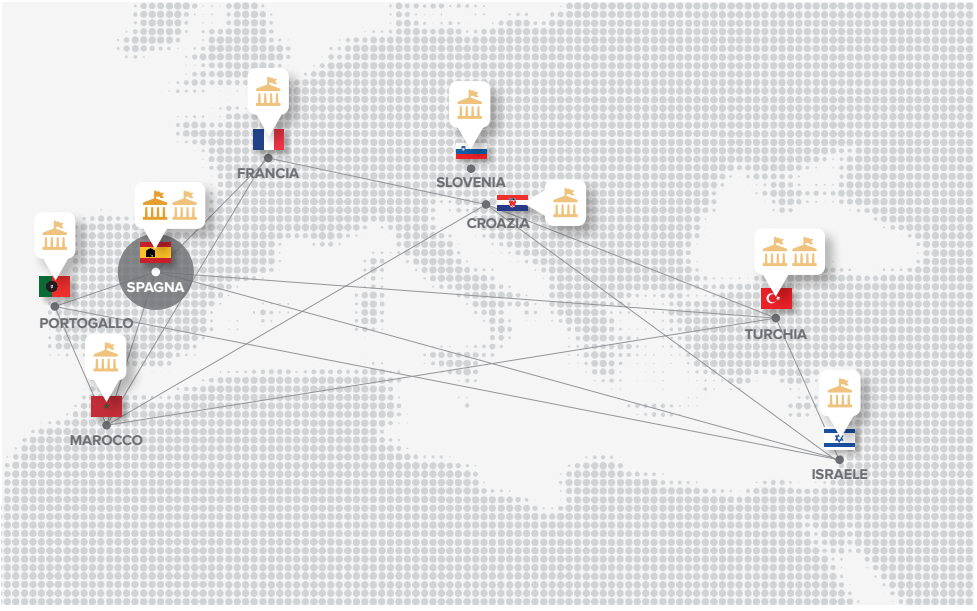
EVOLVEPACK will be executed over 36 months with a total budget of € 1.998.553,22 requesting a public contribution of € 1.559.053,96. The project will generate broad scientific-technological knowledge (TRL 4) and develop applicable solutions (TRL 6-7), under an overall approach structured in 8 Work Packages.

Obiettivi e contenuti

The overall objective of the EVOLVEPACK project is to design and produce innovative, cost-effective, compostable and/or recyclable food packages based on active bioplastics and cellulosic materials. Trays, flexible films and absorbing pads will be developed considering a circular economy strategy.

A thorough analysis of the antimicrobial packaging structures in terms of composition, antimicrobial characteristics, safety assessment and validation in food products will be carried out. These materials will be used to pack fruit/ vegetables and fish, which are the basis in the Mediterranean diet, but are prone to rapid deterioration.

Migration studies will be performed to assess the food safety of the developed concepts. Quantitative and non-quantitative constraints such as processability, consumer acceptance food safety, among others, will be considered in order to facilitate the design of sustainable packaging structures based on a requirement-driven approach.



Altri Enti partecipanti/ 9

TECSELOR S.L.- ES

University of Zagreb (UNIZG-PBF) - CR

University of Bourgogne (UB) - FR

Agricultural Research Organization (ARO) - IS

ENCG-Tanger/University Abdelmalek Essaâdi (UAE) - MR

Universidade Católica Portuguesa | Porto (UCP) - PT

Pulp and Paper Institute (ICP) - SL

Tarsus University (TAU) - TR

Camusfish su ürünleri san. Ve tic. Ltd. Sti (CAMUS) - TR

EVOLVEPACK will also provide an answer to society´s concerns related to food safety, environmental and economic circularity issues of the food industry and food packaging in the Mediterranean region.

Risultati e impatti attesi

The project Consortium is composed of 10 Partners from 8 different countries, covering a range of complementary competences and skills, aligned with the European Strategy for Plastics in a Circular Economy from 2018, which seeks to contribute to one of the Sustainable Development Goals (SDGs) from the United Nations, related to prevention and reduction of marine contamination, promoting the use of more sustainable materials.

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Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

999.768 €

Durata

36

Paese ed Ente coordinatore

PORTOGALLO
Centro de Biotecnologia e Química Fina - Universidade Católica Portuguesa

CATÓLICA
CBQF · CENTRO DE BIOTECNOLOGIA E QUÍMICA FINA LABORATÓRIO ASSOCIADO
PORTO

Coordinatore scientifico:
PINTADO, Manuela

Paesi partecipanti/ 4

Unità di ricerca/ 8

Sezione 2

NOVAPACK

NOVel Antimicrobial coatings and PACKaging in the mediterranean

Contesto

The main goal of the NOVAPACK project is the development of novel and cost-competitive antimicrobial coatings, films and bio-based packaging based on bio-based and biodegradable products, to reduce food waste and plastic, while improving Mediterranean food products' shelf-life and safety.

Obiettivi e contenuti

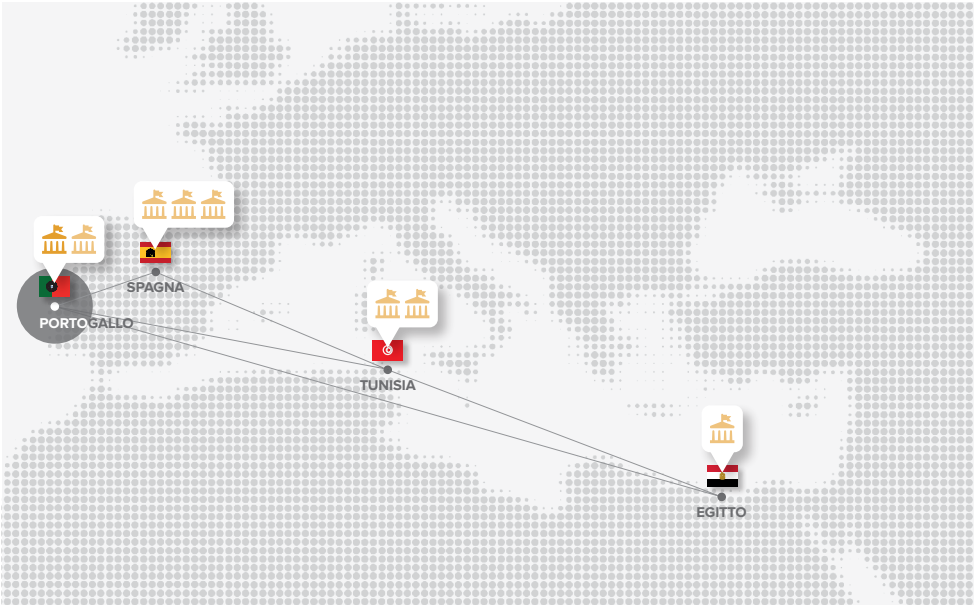
Specifically, NOVAPACK will develop different extracts ranges (e.g., bioactive compounds, soluble polysaccharides, and lignocellulosic materials) through the application of integrative upcycling strategies of F&V losses and by-products, produced at the food supply chain.

The extracts with antimicrobial and antifungal activities and antioxidant properties will be used in the development of active food coatings and films, and natural-coloured extracts and pH indicators will functionalize the biodegradable packaging.

To develop newly designed food products with enhanced shelf-life, quality and health-related beneficial properties, the bioactive coatings will be applied to the most perishable foods (e.g., strawberries, blueberries, red berries and tomatoes) increasing their resilience to contamination, increasing water retention capacity and increasing food shelf-life.

Risultati e impatti attesi

The biodegradable films and packaging combined with bioactive extracts will be applied to perishable animal products (e.g., sliced cheese and ham) synergistically



Altri Enti partecipanti/ 7

Molecule Message Unipessoal Lda (AgroGrIN Tech), AGT - PT

National Research Centre (NRC) - EG

National Technological Centre for the Food and Canning Industry (CTNC) - ES

Technological Institute of Plastic (AIMPLAS) - ES

EVERSIA S.A. - ES

ISBA Medenine Gabed University (UG) - TN

Zina Fresh Company Gabes (ZFCG) - TN

acting in the reduction of food losses, food spoilage and the use of plastic, leading to better consumer safety features aligned with relevant standards.

The objectives of NOVAPACK will be achieved since the consortium gathers a diversified group of leaders that ensures the know-how, engages with key stakeholders (public and private actors) and promotes its participatory action and fully addresses the PRIMA Topic 2.3.1- 2023 (RIA) Assessing novel antimicrobial food packaging and coating materials (Section 2).

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.620.000 €

Durata

36

Paese ed Ente coordinatore

GRECIA

Elgo-Dimitra Hellenic Agricultural Organization - Dimitra

ELGO - DIMITRA
HELLENIC AGRICULTURAL ORGANIZATION - DIMITRA

Coordinatore scientifico:
MARKOU, Giorgos

Paesi partecipanti/ 7

Unità di ricerca/ 9

Sezione 2

NOVISHPAK

Novel biodegradable, antimicrobial and smart packaging and coatings for increased shelf-life of Mediterranean fish filets

Contesto

Within this 36 month proposal, 9 partners will join forces to develop, produce, test, validate, evaluate in terms of consumers perspective and design business models for the packaging solutions proposed.

Three (3) European Mediterranean countries (Greece, France, Malta), 1 North European country (Germany) and 3 North African countries (Algeria, Morocco, Tunisia) will closely collaborate allowing for both cross-sectorial interdependencies and regionalization.

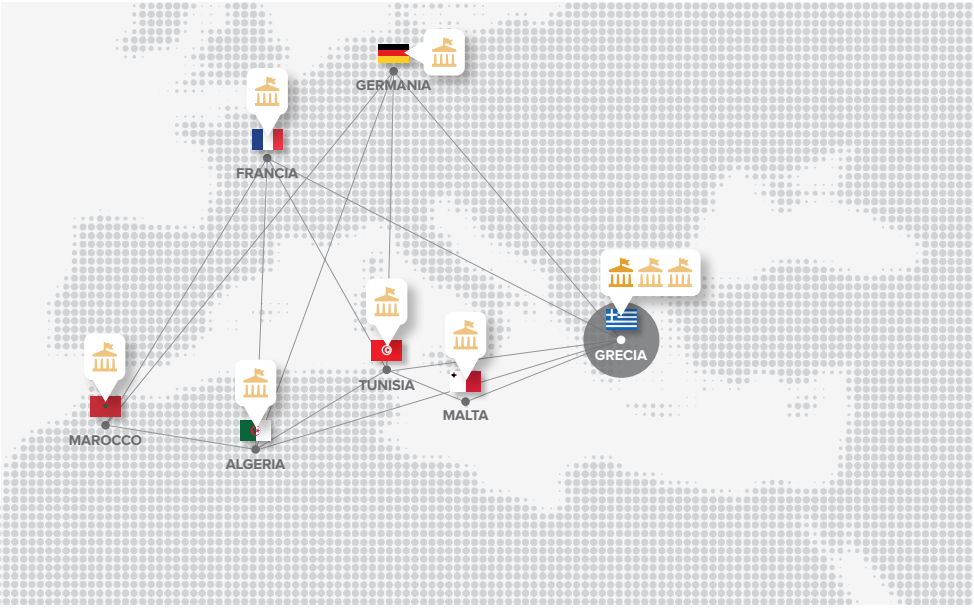
All partners will work towards the knowledge-sharing and capacity building and will contribute in the PRIMA WEFE community by the knowledge dissemination regarding the protocols of novel packaging solutions development and implementation. NOVISHPAK vision is to effectively contribute to food sustainability and healthy products development along with food waste reduction.

Obiettivi e contenuti

NOVISHPAK aims to develop innovative, cost-competitive, biodegradable packaging films and edible coatings with antimicrobial properties.

They will be used for the shelf-life extension of Mediterranean fish fillets, with the potential however to be applied to other agro-industrial products as well.

Their production will be based on kelp seaweed polysaccharides and their functionalities will be enhanced by incorporating natural parabiotic compounds originating from probiotic microorganisms as well as antimicrobial agents from kelp seaweed pigments/polyphenols and fish fillet production waste.



Altri Enti partecipanti/ 8

Nkua - GR

GRECA PESCA - GR

ESSAIA - AL

Leibniz Institute for Agricultural Engineering & Bioeconomy (ATB) - DE

International Centre for Advanced Mediterranean Agronomic Studies - Montpellier (CIHEAM-IAMM) - FR

University of Malta - MT

University of Mohammed Premier (UMP) - MR

University of Tunis El Manar (UTM) - TN

Risultati e impatti attesi

Cutting-edge technologies such as cold atmospheric plasma (CAP) will be employed to enhance material's surface characteristics, mechanical, and thermal properties. Smart packaging detecting food spoilage after incoporating scavengers and color-changing dyes that respond to ammonia and pH changes will be also developped and applied to the studied food products. These smart packaging will act as a decision support system for a more efficient food handling, thus reducing food waste.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

912.407 €

Durata

36

Paese ed Ente coordinatore

TURCHIA
Sabanci University Nanotechnology Research and Application Center

SU NUM SABANCI UNIVERSITY NANOTECHNOLOGY RESEARCH AND APPLICATION CENTER

Coordinatore scientifico:
UNAL, Hayriye

Paesi partecipanti/ 5

Unità di ricerca/ 8

Sezione 2

OLIVEPACK

Bio-based antimicrobial packaging materials to increase the shelf life of naturally fermented low-salt table olives

Contesto

The proposed project “Bio-based antimicrobial packaging materials to increase the shelf life of naturally fermented low-salt table olives (OLIVEPACK)” offers an innovative, circular economy-oriented bio-based antimicrobial food packaging material that is specifically tailored to increase the shelf life of table olive, a food product that is of high economic importance for the Mediterranean region.

Obiettivi e contenuti

An innovative solution will be presented to the problem of the use of high salt concentrations or chemical additives, which are required to preserve naturally fermented olives, but seriously threaten human health.

Within the scope of OLIVEPACK, a biobased, biodegradable, antimicrobial bionanocomposite foam composed of natural components, that is designed to be placed into any table olive packaging as a packaging insert will be developed.

Adapting a circular economy approach, the packaging inserts will be composed of natural antimicrobial agents extracted from table olive wastewater and cellulose polymer matrix extracted from olive tree waste.

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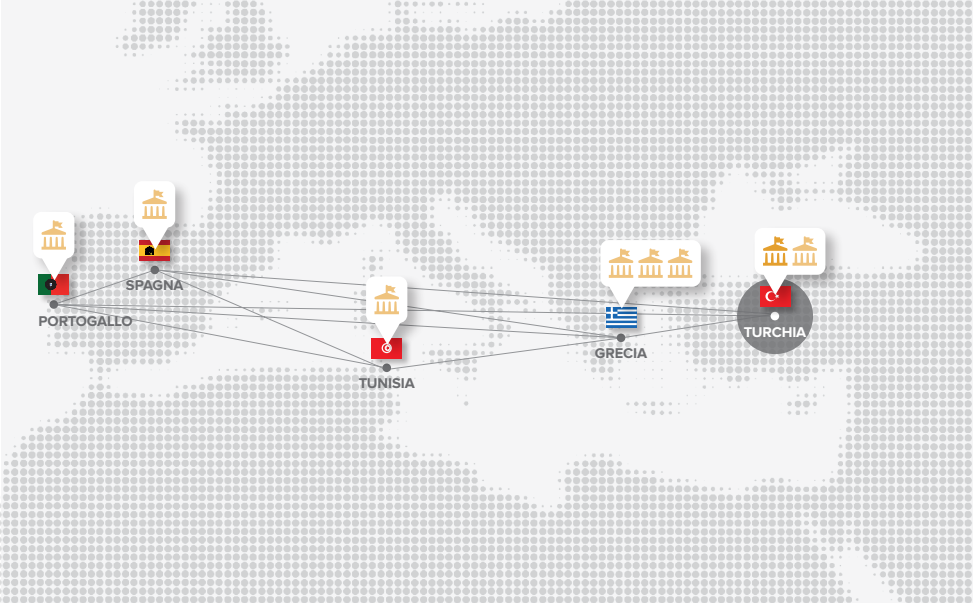
Risultati e impatti attesi

Through a multidisciplinary approach integrating expertise in materials science, food microbiology, sensory analysis and food science, the food packaging inserts will be evaluated in terms of their antimicrobial activity, their effect on the nutritional, physicochemical and sensory properties of table olives, and also their market acceptance and socioeconomic impact. OLIVEPACK, through an interlinked,



Altri Enti partecipanti/ 8

Bornova Olive Research Institute (ORI) - TR

University of Extremadura (UEX) - ES

Institute of Electronic Structure and Laser of the Foundation for Research and Technology-Hellas (IESL) - GR

Agricultural University of Athens (AUA) - GR

Georgoudis S.A. - GR

Polytechnic Institute of Bragança (IPB) - PT

University of Sfax (USFAX) - TN

interdisciplinary, multi-actor approach, will make significant progress beyond the current state of the art by introducing a novel storage solution for low-sodium, preservative-free naturally fermented table olives. The novel bionanocomposite foam packaging inserts solely composed of natural and biodegradable components will not only help to reduce food waste but also ensure consumption of safer and healthier table olives with extended shelf-life, all without putting any burden on the environment.

Area tematica

Agri-food Value Chain

Azione e Topic

(RIA) Assessing novel antimicrobial food packaging and coating materials to reduce food waste to improve safety in the Mediterranean food supply chain

Budget

1.312.778 €

Durata

36

Paese ed Ente coordinatore

SPAGNA
University of Oviedo

Universidad de Oviedo

Coordinatore scientifico:
RENDUELES DE LA VEGA, Manuel

Paesi partecipanti/ 6

Unità di ricerca/ 12

Sezione 2

SuN4Med

Sustainable and novel tood packaging based on agro-industrial by-products and natural antimicrobials from the mediterranean area

Contesto

The production and distribution of food result in a significant amount of waste and losses. The FAO reports that one third of the food quantity produced annually for human consumption is lost or wasted through the supply chain. Meanwhile, petrochemical polymers are commonly used as packaging materials, despite their non-biodegradability, production of significant greenhouse gases and potential harm to human health. In response, the concept of food packaging and coating materials based on biodegradable polymers has emerged as a more sustainable option.

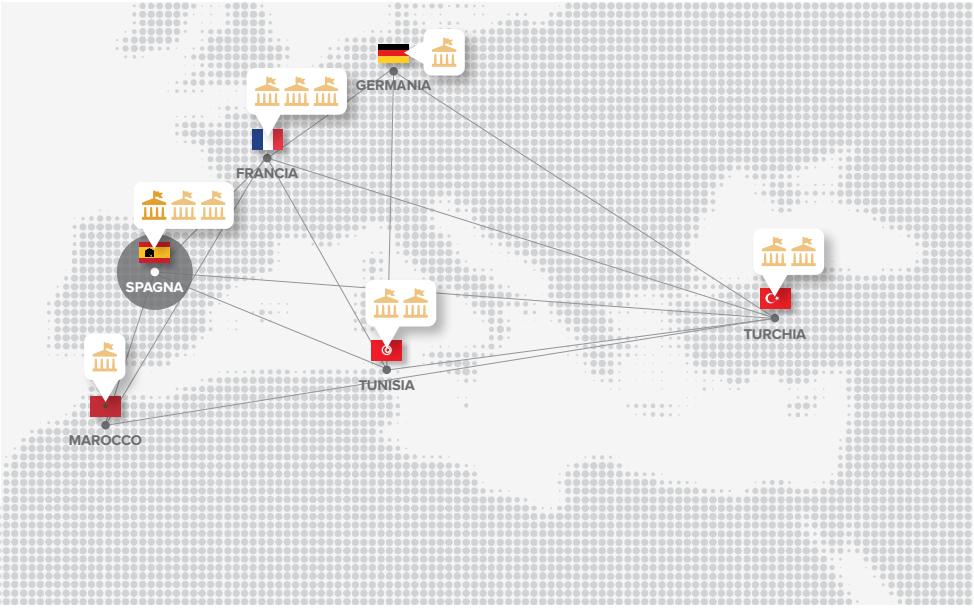
Obiettivi e contenuti

The SuN4Med project aims at proposing solutions to prolong the shelf life of foods, to reduce food waste and lost, and to improve safety by developing biodegradable and antimicrobial food packaging and coating through a circular economy (valorization of agro-industrial wastes) and a green chemistry (use of eco-solvents and low-energy processes) approaches.

SuN4Med project plans to combine cellulose extracted from hazelnut or almond shells or prickly pear peels with potato peel starch, or with pectin from citrus peels or grape pomace to create composites. Hydroxyapatite will be used as a cross-linker.

Risultati e impatti attesi

By combining these biopolymers, the resulting biodegradable packaging material could offer enhanced mechanical and barrier properties compared to the existing



Altri Enti partecipanti/ 11

Instituto Tecnológico de Castilla-León (ITCL) - ES

Iberfruta Muerza S.A. - ES

University of Wuerzburg - DE

Laboratoire d'Automatique, de Génie des Procédés et de Génie Pharmaceutique- Université Lyon 1, LAGEPP (U-Lyon1) - FR

Institut de Science des Matériaux de Mulhouse-CNRS (IS2M- CNRS) - FR

Aptar Csp Technologie - FR

Cadí Ayyad University - MR

ENIS, University of Sfax (ENIS) - TN

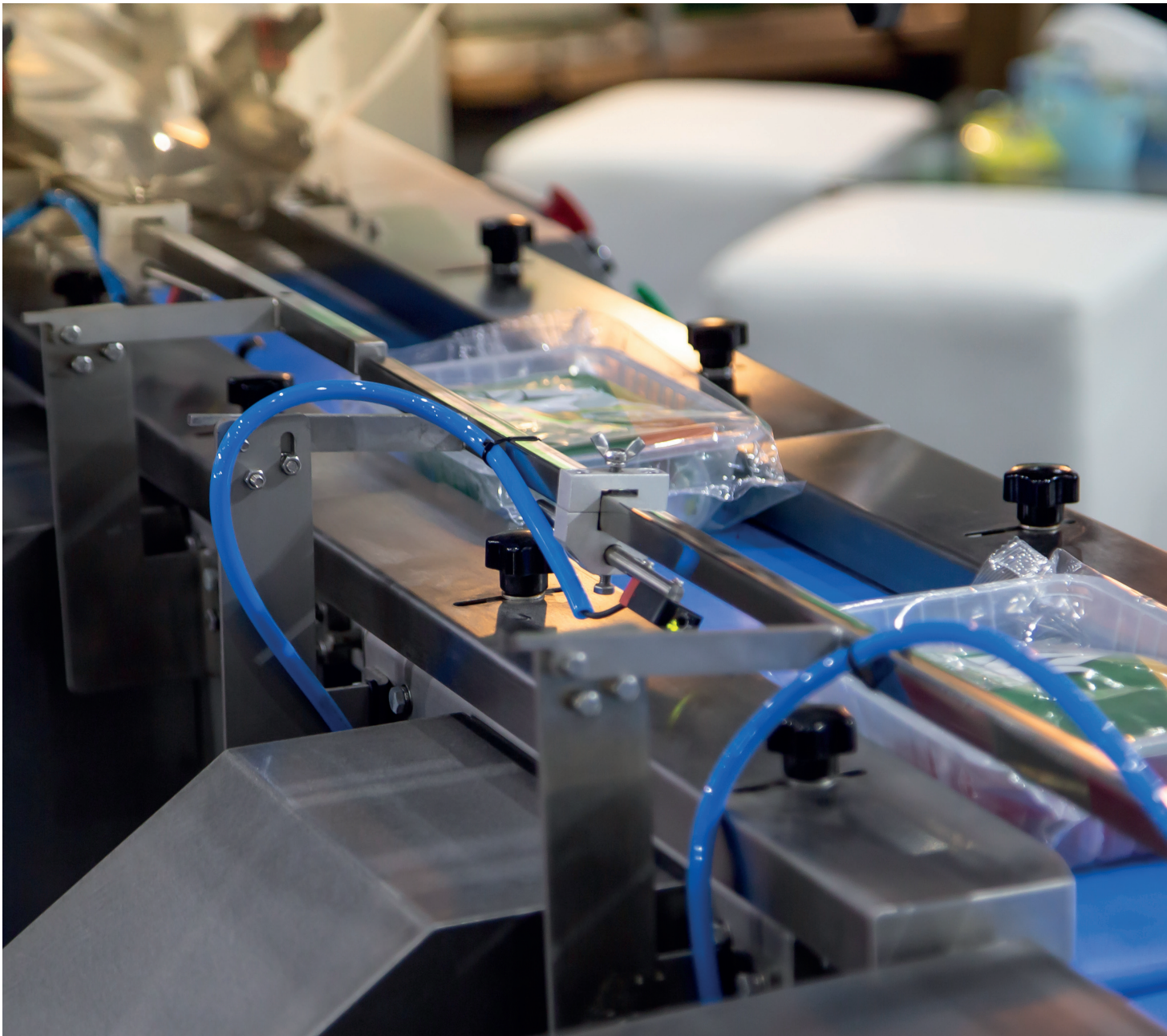
Research Unit Advanced Materials, Applied Mechanics, Innovative Processes and Environment- University of Gabes (ISSAT) - TN

Süleyman Demirel University - TR

Teknopak Plastik San Ve Tic Ltd Sti (Tplastik) - TR

ones. The new composites combined with natural antimicrobials extracted from agro-industrial by-products, increase the shelf life of foods and present several potential advantages compared to current packages on the market.

SuN4Med project is composed of a consortium of 12 partners (8 academic and 4 industrial partners). Starting with TRL 2, we expect to have at least two demonstrators to launch at the industrial level. These biocomposites will be versatile, to be implemented in the future for a new generation of food films, and this new concept of composite should reach TRL 7 with the help of our industrial partners at the end of the project.



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PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA

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www.primaitaly.it

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Siena, Italia
https://santachiaralab.unisi.it

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ai sensi dell'art. 185 del Trattato
sul funzionamento dell'Unione europea.

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